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This list somewhat surprised me in regard to two notable omissions—namely, fractures of the clavicle or of the knee-joint, that is of the lower end of the femur. I think that clavicle fractures are now treated very much better than they used to be, because it is recognised that mobility of the shoulder must be maintained, whilst restricting apparatus, other than slings, which support the arm and keep the shoulder back are superfluous. The knee fractures are not on this list for quite another reason, and that is that everybody, doctors and patients, are frightened of these injuries, and realising from the outset that they are likely to give bad results, they are sent direct to hospital or to a consultant. Whilst admitting the gravity of knee fractures I do not think that they ought to cause undue anxiety, as they readily yield to traction methods or to open operation. They certainly do not alarm me as much as the corresponding fractures of the elbow-joint.

Humerus (excluding the lower end).—There were seven of these cases, in four of which the upper end was fractured and in three the shaft. In fractures of the upper end, whether of the head, tuberosities or neck, the two points of importance are to make an accurate diagnosis by the X rays and to maintain the limb in full abduction until early union has taken place. X rays are necessary, not so much to make the diagnosis—although without them an impacted fracture may be overlooked—as to ascertain details of the shape and direction of the break, the presence of comminution or dislocation. If the head is dislocated and the neck broken then the open operation is the only reasonable treatment, but in all other cases traction in full abduction by means of a Thomas straight splint should be the first method tried, whilst impaction by open operation is used for cases not reduced by the abduction. All these shoulder fractures should be kept up in an abduction splint after reduction has been effected, and later on one of the light wire patterns which maintain a position of bent elbow, as high as the shoulder and hand nearly opposite the face. This is the best means of preventing stiff shoulder with atrophy of the deltoid, which is the usual disability following a badly treated case.

Of the fractures of the shaft, two were cases of non-union with false joints, and one was merely a condition of delayed union associated with defective plating. Of non-union of fractures of the humerus I will content myself with saying that I think the condition might often be prevented by putting up the arm in an ambulatory abduction splint which is the only way of securing immobilisation and preventing the drag of the arm. When once a false joint has been established nothing but a reconstructive operation is of any avail, and this operation is one of great difficulty, involving step cutting of the bone-ends and possibly bone-grafting.

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From the point of view of guaranteeing a good functional result, I think the fractured elbow in a child is the most difficult case which a surgeon may be called upon to treat, whether he is a country doctor or an experienced specialist. The simplicity or complexity of the fracture of the humerus is no certain guide to prognosis. One of my patients who developed actual ankylosis had a simple separation of one condyle which united in perfect position. Two cases were put up in full flexion, three in moderate flexion, seven at right angles. This, so far as it goes, shows that the more flexion can be secured the less is the chance of a stiff elbow. Probably the most certain cause of stiffness of the elbow is injudicious massage and forced movement. The ideal treatment consists in reduction under an anæsthetic, flexion of the arm, and no forced movements. Only gentle massage is used, and the arm is left alone for a week, and after that is allowed to drop by its own weight once a day as far as it will without pain and then replaced in full flexion. Forced painful movements within a few days of the fracture, and deep massage, are responsible for most of the stiff elbows in which the reduction of the fracture has been complete. Open operation gives no assurance of success as far as the future mobility of the elbow is concerned. In regard to displacement, the best result will follow manipulative reduction, and open operation should only be used when manipulation has failed, and particularly when one of the condyles is displaced. Open operation should be of the simplest possible character, a mere impaction or fixation of a condyle by means of a fine steel nail. Elaborate plating or

* The substance of this paper was delivered in the form of two addresses, the first to the Wiltshire Division of the British Medical Association at Chippenham, and the second to the Newport Medical Society.

wiring may restore a good shape to the bone, but will almost certainly leave a stiff joint.

Ischæmic paralysis or, as it used to be called, Volkmann's contracture, is a tragedy both for the patient and the doctor. In a bad case the whole forearm becomes stunted in growth, the muscles atrophy to fibrous cords, and the fingers are contracted into a claw shape. In cases of moderate severity great amelioration can be effected by careful treatment, carried out for one or two years, but the patient usually remains more or less crippled. It is due to a blocking of the circulation, caused primarily by an effusion of blood, and sometimes secondarily by tight bandaging. At one time, when the condition was first described, it was thought that it only resulted from tight bandaging over narrow splints. We know now that it may also arise in cases which are not splinted at all, but only put up in acute flexion. In three cases of the present series all were manipulated under an anæsthetic. One was bandaged on to an angular splint, one was fixed by a plaster bandage, and one was bandaged in full flexion. The important practical points are the length of the time which has elapsed since the fracture, the degree of swelling, and, above all, the condition of the pulse. In all doubtful cases with much swelling and a pulse definitely smaller on the affected side, it is much wiser to do nothing more than lay the arm on a pillow with the elbow at a right angle until the swelling has gone down and the pulse has returned. I think that text-books are not explicit enough on this point—namely, that full flexion of the elbow can be just as dangerous as a tight bandage.

Fractures of the Radius and Ulna Shafts (17 cases).—In most of these cases (11) the serious trouble which called for consultation was the displacement of the shaft of the radius towards the ulna, so that the hand deviated towards the thumb and supination was lost. This sagging inwards of the radial fragment is very difficult to prevent, even if the case is seen within a few hours of the accident. I know of no splint or traction appliance which effectively controls the tendency of the radius to fall towards the ulna. Apart from operation, the one chance of success lies in very careful reduction under the guidance of the X ray screen. In this way the radial fragments can be made to impact, and then they will hold. If the case is seen a few days or more after the accident, and if then the lower radial fragment is inclined towards the ulna, it is much better to operate than to temporise further with splints or manipulation. Generally the operation is very simple, consisting in mere impaction of the radial fragments, using an intramedullary peg only when the impacted fragments refuse to remain in contact. After reduction and impaction of the fracture, the arm is put up with the elbow at right angles, midway between supination and pronation, or in full supination. Of the remaining cases in this group, five were fractures in which some form of operation had had a bad result, and in one there was non-union of the ulna. It will simplify this paper if I defer consideration of these for the present.

Colles's Fracture (7 cases).—In one of these the fracture had been compound, with severe sepsis. In all the remaining six, deformity with loss of function had resulted from incomplete reduction of the original displacement. This point is therefore one of great importance—if the displacement is really and fully reduced then there is comparatively little fear of a bad result. The cases likely to lead to trouble are those in which the deformity is not extreme, being hidden by swelling or disguised by splinting. In early cases there ought not to be any real difficulty in correcting the deformity under an anæsthetic. In later cases a wrench may be used. Of the six cases under present consideration, one gave a satisfactory result after late reduction (six weeks), one required an open reduction (two months after accident), and the remaining four either refused further treatment or were not considered suitable for such.

Neck of Femur (9 cases).—These were all fractures of the true neck of the femur, or, as they used to be called, "intracapsular." In one case the patient had never been laid up, but persistent pain required investigation, and the X rays revealed an impacted fracture six months after the injury. No special treatment was required at this stage, and apart from humiliation to the doctor and the risk of legal action no great harm was done. In one case the patient was a girl of 14, who became lame after a trivial accident, and eight weeks later the X ray showed that the epiphysis of the head of the femur had slipped so as to cause well-marked coxa vara. This was corrected and pegged by an open operation, and a year later the form and function of the hip were perfect. All the other seven cases were instances of non-union after periods varying from a few months to two years. It is not sufficiently recognised that these fractures do not unite when left alone or when treated by a straight splint or by simple traction. If a fracture is through the neck of the femur well above the intertrocanteric line, it will never unite unless it is impacted either by the original accident or by artificial means. And, further, the fractures which appear to be impacted—i.e., are in good position with no displacement—are very likely to become disunited unless very special precautions are taken. Two of my cases were instances of this. In one the patient was a boy of 16, and the other a man of 55. In each it was taken for granted that the impacted fracture was united long before union had taken place: active and passive movements were encouraged and full massage employed, and in both the fracture became disunited and an operation was required. An impacted fracture of the femoral neck should be treated by fixed abduction for six weeks, and a walking calliper for six months, otherwise there is a big risk of coxa vara or non-union.

It should therefore be laid down as a definite rule that no fracture of the true neck of the femur will ever unite unless it is forcibly impacted and held in this impaction for at least six months. On the other hand, it is equally true that in the great majority of cases this treatment of impaction will bring about union. It is quite unjustifiable to abandon such a case to the misery of painful lameness, even if the patient is of advanced years. There are two effective methods of treatment. In one the leg is forcibly pulled down under an anæsthetic, and then forced into a position of full abduction and slight internal rotation so as to force the broken surfaces together. This position is maintained by a plaster case extending from the lower part of the chest to the foot. The application and after-care of such a plaster splint can only be undertaken by those accustomed to this work. But in all cases of patients of active habits and in good health, and especially when three months or more have elapsed since the accident, I think it is much more satisfactory to bring about impaction and to fix it by means of an open operation, driving a bone peg through the neck of the femur. In the seven cases under present consideration only one was treated by plaster abduction, and that was a stout and alcoholic woman who refused operation. The result was fairly satisfactory, being a close fibrous union with some lameness, but no pain. The other six cases were all pegged, and in all bony union resulted. In one of these cases, a woman of 35, the non-union had persisted for two years; but, nevertheless, perfect union resulted from the operation, so that a year after she could walk with neither pain nor lameness and the X rays show perfect restoration of the femoral neck.

Shaft of the Femur (12 cases).—In one of these the chief trouble was caused by sloughing of the skin over the foot and heel due to traction applied to the foot. In one a compound fracture had been plated with the usual result of sepsis, necrosis, and malunion. In six there was gross malunion with angulation and shortening, and in four there was non-union with pseudarthrosis or a fibrous joint. In two of the cases of non-union and in one of malunion the fracture had been treated by primary plating. In one of these the plate and screws had been removed

because of sinus-formation, and in the others the plate and screws remained in position as loose foreign bodies. Time and space do not permit of an adequate discussion of this group of cases, and I must content myself with laying down a few general principles.

First, as to the best method of securing good union of the femur—that is, a sound healing with full length and good position. I am firmly convinced that the routine method should be that of adequate traction. It is not a question of using So-and-So's splint; but it does mean that the femur must be pulled upon by a traction force which will over-reduce the displacement with half an inch or more to spare, and which can be relied upon to maintain this extension for at least four weeks. In some patients, including all children, this can be done by adhesive plaster and a Thomas splint. But in muscular adults, and especially when the case comes for treatment a week or more after the accident, pin-traction is much more satisfactory. It is less painful to the patient and much more certain in its results. Ice-tong callipers or transfixion pins will both give an efficient hold on the bone, but I must confess I greatly prefer the transfixion pin. I do not hesitate to use as much as 60 lb. traction in those cases where there is much shortening and of old standing. The weight is applied by two pulley blocks. Directly the over-length has been obtained the weight is reduced to 40, 30, or 15 lb. The one crucial test of the efficiency of any traction method should be that the broken bone is really pulled out to a little more than its normal length within a few days of the application of the traction. Anything short of this is inefficient and is likely to give a poor result. But if this test is carried out, then there may be perfect assurance that neither malunion nor non-union will result. Furthermore, the union of the bone will be rapid and firm, much more so than after the most perfect plating. In regard to the treatment of the six cases of malunion, in three cases several years had elapsed since the fracture, the bone had undergone reconstruction, and no operation was advised. In the other three osteotomy or re-fracture was done and the cases treated by pin-traction. In all these full length and good union was obtained. The four cases of non-union were all successfully treated by reconstructive operations. In one, an oblique fracture, it was possible to refresh the fracture and to unite by two Parham's bands. In the other three the bone-ends were reshaped and united by means of a pair of bone plates bolted together on either side of the fracture. In all these union occurred, but the healing process was slow, taking 8 to 14 months before the bone was strong enough to bear the body-weight.

Shafts of the Tibia and Fibula (22 cases).—These are easily classified as follows:—

Malunion	11	Delayed union	5
Non-union	5	Compound fracture ..	1

In nine of the cases of malunion there was marked angulation, which threw the ankle-joint out of line, causing some degree of valgoid deformity. In the remaining two cases where there was 1 or 1½ inches of shortening but no angulation, the foot was unaffected, and therefore there was comparatively little disability, and as a year or more had elapsed since the accident in both these cases no further treatment except a slightly raised boot was advised. It ought not to be difficult to put up a tibia so as to avoid angulation. The mistake usually arises from the use of some type of box-splint or plaster-of-Paris in which the true position of the bone is concealed. If the radiogram shows marked over-riding, then traction should be undertaken without delay. Efficient traction can seldom be applied by adhesive plaster, and it is essential to use an ice-tongs calliper or a small pin through the os calcis. When full length or overlength has been secured, it is comparatively easy to correct any angulation, and it is wise to keep the foot inverted and at a right angle all the time. Within a week of achieving a good position of the fracture, the leg may be put in a plaster case which reaches from the balls of the toes to the tubercle of the tibia. The plaster is applied with the transfixion pin in position, full traction being maintained all the time, and the pin is only removed when the plaster is set. A week or two later the plaster is cut into two halves which are removed for daily massage. In the long spiral fracture, even efficient traction will often fail to make good reduction, and it is in such cases that open operation is strongly indicated and may be relied upon to give rapid union. From the point of view of simplicity and mechanical efficiency some form of cerclage is much more satisfactory than plating.

There were five cases of non-union, varying from one to four years after the accident. In no less than three of these a plating operation had been done, and the failure of such operation must be regarded as a definite cause of non-union. In the first place, there is a wide exposure of the bone and a partial stripping of its external vascular supply. Then, if plates and screws do not hold, these lie as loose foreign bodies across the fracture and prohibit callus union. When at last the plates and screws are taken out, the bone has usually become indolent, sclerosed, and incapable of healing. In these three cases (non-union after plating) the final treatment was by a massive graft taken from the opposite tibia and in all union resulted. Of the other two cases of non-union where the condition was due simply to want of apposition between the fragments, success was attained in one by refreshing and shaping the bone ends, impacting them together; but in the other case this treatment was followed by secondary hæmorrhage, necessitating amputation.

In five cases the trouble was merely that of delayed union. Any case of fractured tibia in which the fragments of bone are in good contact and alignment, but where union is slow, may be treated with perfect confidence by walking exercises. The leg is supported by a pair of short irons from the heel of the shoe to the tubercle of the tibia, and the patient encouraged to bear weight upon the foot. In all these five cases this treatment caused ultimate union, though very slowly. It is very important to bear in mind that if union does not occur in spite of good contact then there must be some underlying cause, vascular or cellular, and that this same cause will be very unfavourable for any open operation.

In one case the fracture had been compound and had been plated. Then sepsis had compelled the removal of the plate. The doctor suggested and the patient begged for amputation, but I am glad to say that long and patient traction with suitable toilette of the wound, and occasionally removal of sequestra, eventually led to a sound union and useful leg.

Ankle (11 cases).—In eight of these a bad result had followed incomplete reduction of the fracture. Valgoid deformity of the foot with a painful stiff ankle was the general result. As in the similar fracture at the wrist-joint the first and most important essential to success is full and complete reduction. This ought to be checked by radiography, because it is difficult to be certain of the relative position of the bones when they are covered by swollen soft parts. The foot must be brought forward, dorsiflexed, and inverted, and when this has been done a close scrutiny is taken of the bones by the X rays to see whether there is any splintering of the posterior surface of the tibia or fracturing of the calcaneum or astragalus or separation of the tibia from the fibula. In some cases I think that satisfactory reduction has actually been made by pulling the foot forward, and then this position is lost by the leg being placed on a padded back splint in which a slot is left for the heel and tendo Achillis. Into this slot the foot slips backwards. A very good and easy method is to place the leg and foot in a piece of stockinette, the upper end of which is fixed by adhesive plaster above the knee. The foot is pulled forward and wrenched into an over-corrected position and then suspended to the bars of a bed cradle, hanging the limb by the toe-piece of the

stocking in such a line as to preserve dorsiflexion and inversion.

In the eight actual cases of malunion under consideration, a fair degree of restoration of function was achieved in five by manipulation or by osteotomy. In one case (originally compound) amputation was advised. One refused treatment, and in one an open operation produced a result which was of doubtful benefit. In three cases of ankle fracture the bones had united in good position, but there had resulted in the one a stiff ankle and in two a dropped foot, with shortening of the tendo Achillis. In all these improvement was attained by wrenching under an anæsthetic or by lengthening of the tendon.

General Principles.

Before leaving this part of my subject I should like to emphasise a few general principles.

The importance of a critical examination of the fracture within a few days of its being put up.—It is, of course, essential to recognise the existence and nature of the fracture before treatment, but granting that this has been done, and treatment by splinting, posture, or traction carried out, then it is equally necessary to get absolute proof within the first week or ten days that the bones are in good contact and correct alignment. It is the failure to get this proof that underlies most cases of bad result. Typical cases are those of fracture of the upper end of the humerus, of the femur, or of the leg bones, where the patient is quite comfortable and to the superficial observer everything looks all right. But the arm comfortably bandaged against the chest or the leg slung up in a splint or perhaps encased in plaster really presents to the X rays gross malposition, and if this is discovered within the first week no very great harm has been done, because it is not too late to bring about correction; but it is wrong to wait for a month or six weeks because in this time malunion may occur or non-union may be established, and to cure either of these will not only require a much more difficult operation, but the patient has a just grievance, whilst the doctor is involved in discredit.

Danger of inefficient plating operations.—In 9 per cent. of the whole series, or about 17 per cent. of the fractures of the shafts of the long bones, the bad result followed from a plating operation in which the plate and screws failed to hold and had to be removed. In most of these there was no evidence of sepsis, and the plate had remained for a long period loose in the tissues, which had healed over it. Either the plate was too short to afford adequate internal splinting, or else external splinting had been neglected, and in either case the result was malunion or non-union. It is very unfortunate that so many practitioners still regard the plating of fractures as the method of choice in all cases where malposition persists. In the arm bones simple operation of impaction, followed by adequate splinting, or, in the leg bones, efficient traction, can be relied upon to give much better and more certain results than plating, and these methods are not only much easier but are devoid of the immediate and remote dangers which are involved by plating.

Dangers of plating compound fractures.—It would seem quite superfluous to say anything on this subject; yet open fractures are still being plated and lives and limbs endangered thereby. When a wounded man is brought in with a broken bone protruding through the skin or seen in the depth of a ragged wound, it would appear that this condition exercises an irresistible influence on some surgeons, who, in spite of all that has been said to the contrary, feel that they cannot be content with a wound toilet unless they also plate the bone. In the days of the war the operation was tried again and again, usually with disastrous results, and the method was killed by its own badness. In civil life any one medical man may be tempted once; if he yields to this temptation it is not likely he will do so a second time. But I would plead that he should not yield even this once, because if he does he will probably bring great danger upon his patient and great trouble to himself. Active sepsis in the wound requiring the removal of the plate is the least of these dangers. Extensive necrosis causing shortening or non-union is the usual result, whilst other cases may end in amputation or death. The subtlety of the temptation lies in the fact that every now and then the operative adventure of plating an open fracture succeeds, and the adventurer probably publishes his case, perhaps attributing his success to the use of some new antiseptic. But while a single success is quite honestly published, 99 dismal failures go unrecorded. Any open fracture which can be safely plated should be converted into a closed fracture and the soft parts soundly healed first before the bone operation is undertaken. But in the great majority of the cases if efficient immobilisation and traction has been carried out during the waiting period, good union will have occurred before the safe time for plating has arrived.

The essential simplicity of fracture treatment.—The very essence of successful treatment lies, I believe, in simplicity. The bones are displaced by the original violence, by gravity, and by the pull of the muscles. Efficient traction in the axis of the limb must be made as the first and necessary act in reduction, and every surgeon should be master of some such method of efficient traction. This may be by adhesive appliances tied to fixed apparatus or by a mobile weight acting over a pulley and holding by means of an ice-tong or transfixion pin. But the traction must be efficient as judged by the length of the limb, the radiographic appearance of reduction, and the permanence of the result. If this standard of efficiency is reached, then very few cases will require operative treatment, and I believe that the more experienced a man becomes the fewer cases he will require to operate upon. Certainty and celerity of recovery may justify an open operation in some cases—e.g., an inwardly displaced shaft of the radius, a separated epicondyle, a fractured neck of the femur, a displaced femoral condyle, a long spiral fracture of the tibia, or a separated malleolous. In such cases usually the operation need only be of a very simple character, consisting in open reduction and impaction with occasional pegging or cerclage.

Fifty Consecutive Legal Cases.

The collection of reports of cases in which legal proceedings have been threatened or action taken is more difficult than that of my own consultations and, therefore, I have had to be content with only 50. Grouping the cases according to the bones involved we have the following list:—

Clavicle	1	Femur neck	11
Shoulder	9	Femur shaft	3
Elbow	3	Patella	1
Radius and ulna	4	Tibia	5
Wrist	5	Ankle	5
Digits	3		

Clavicle.—The accident and the injury were of a straightforward character, and no doubt existed as to the diagnosis. For this reason no radiograms had been taken. The case passed into the hands of another practitioner, who considered that there was evidence of pressure upon the brachial plexus by a deep splinter of bone. He operated upon the fracture and united the bone by means of a plate. The doctor who first saw the case was sued for negligence, and it was useless for him to protest that there had been no evidence of comminution or of special displacement of the bone, because he had no radiograms at his disposal.

Shoulder (9 cases).—In all of these there existed either dislocation of the joint or fracture of the head or neck of the humerus. In all of them X ray examination had not been made or had been delayed for some weeks. In three cases dislocations had been missed; in four a fracture dislocation had been missed; in one a fracture had been missed, and in one a fracture had been correctly diagnosed but a dislocation missed. This short and sad recital hardly

requires a commentary, but it is certainly remarkable that the very same kind of case which many years ago first established the medico-legal importance of X rays should still furnish about 18 per cent. of the present list.

Elbow (3 cases).—Here again the trouble arose in all three cases owing to the absence of radiographic examination. In one there was a dislocation of the elbow which had been reduced, but a stiff joint followed, and at a later period X rays showed that whilst antero-posterior displacement had been corrected yet lateral dislocation had persisted. In one case a fracture of the lower end of the humerus had been missed, whilst in the third a fracture had been correctly diagnosed and treated but a coincident dislocation (of the head of the radius) missed.†

Radius and Ulna (4 cases).—In all these the absence of radiological examination was the cause of litigat on. In two the fractures were missed, and in the other two malunion and non-union occurred, and it was suggested that these complications might have been avoided if the character of the fracture and the position of the fragments had been subjected to inspection by the X rays.

Wrist (5 cases).—In one of these, a Colles's fracture in an elderly patient, a stiff and painful joint resulted, and a second practitioner to whom the patient resorted made certain unguarded remarks about its being "a bad result." Fortunately radiograms had been taken, and treatment carried out on ordinary lines, and therefore the threatened action was withdrawn. In the other four cases no X ray examination had been made. In one the fracture (impacted) had been missed, and in the other three, diagnosed as a Colles's fracture, some complication had been overlooked. This complication in two cases was a fractured scaphoid, and in one case a dislocated semilunar bone.

Digits (3 cases).—In all of these the main injury was so obvious that X ray examination was considered unnecessary. Two were dislocations of the thumb, one being compound and the other a severe laceration. In all three stiff joints followed, and a late radiogram showed splintering of the metacarpals or phalanges.

Femur (11 cases).—This is the largest group of legal cases, being 22 per cent. of the total. In every one without exception the alleged negligence consisted in the failure to make a diagnosis owing to the absence of X ray examination. In three of these impaction had occurred, and the treatment and after-result would not have been much affected by radiography. In one the patient had osteo-arthritis of the hip, which was made much worse by the accident, and it was not until four years later that the presence of the fracture was detected. The other seven cases suffered all the disability which attends an ununited fracture. This is the type of case in which there is perhaps the most excuse to be made for the neglect of X rays. In the first place the deformity is trivial, and no great disability, apart from pain, is apparent so long as the patient remains in bed. An X ray examination would involve the use of a portable apparatus which is often not available or a transport of the patient by stretcher or ambulance to a more or less distant hospital. So the dangerous policy of drifting along without a more accurate diagnosis than those of "sprain" or "contusion" is followed, and eventually the real cause of the disability is discovered, and only too often litigation ensues. Every case of hip injury in which pain and disability do not clear up within one or two weeks should be provisionally diagnosed and treated as a case of fracture, and the patient or her friends should be told of this. The necessary trouble and expense of the X ray examination will be then readily undertaken.

Femur (shaft) (3 cases).—In all of these there was malunion and shortening. In two no radiograms had been taken as the diagnosis was so obvious. In one case the patient was transferred to another practitioner, who was able to correct the malposition.

Patella (1 case).—This, like the solitary clavicle case, is of exceptional character and interest.

Dr. A saw a middle-aged lady after she had fallen on her knee and found her suffering from marked synovitis and effusion. This quickly subsided with rest and lotion, and the patella was felt to be of normal outline and mobility. The question of an X ray examination was discussed, but the doctor said he thought it was unnecessary, and as the patient was of very moderate means, but above the hospital class, she was very glad to avoid the expense. A few weeks later, whilst she was walking in the street, she fell down and had to be carried home. A local bonesetter was called to see her, and found an obvious fracture of the patella, with typical separation of the fragments. He advised calling in a surgeon, Mr. B, who operated upon the knee and gave it as his opinion that the patella had been fractured at the time of the first accident and that it ought to have been operated upon at that time. A good defence might have been made on the grounds that even if a fracture had existed after the first accident, yet as the fragments were not separated no operation was then indicated. But Dr. A's statement as to the condition of the patella could not be corroborated in the absence of X ray evidence, and as the claim was made for a comparatively small amount, the chief item being Mr. B's operation fee, it was paid without going into court.

Tibia (5 cases).—In two of these there had been no radiogram. The fractures were compound and the diagnosis obvious. But grave malunion occurred in each, due to lateral displacement which ought to have been recognised and corrected. In one case X rays had been taken, but had missed the seat of fracture. In the other two non-union occurred which required an open operation. But as in both these cases radiograms had been taken and ordinary splint treatment carried out, the threatened litigation had been dropped.

Ankle (5 cases).—In only one of these had X rays been used, and in this case they proved most fortunate, because subsequent trouble was caused by the action and statement of a bonesetter, who declared that he had "replaced one of the small bones of the foot." The radiogram produced proved the fallacy of this statement, and the threat of litigation was withdrawn. In all other four cases there had been no X ray examination in the first place—three "obvious cases of Pott's fracture," and one of "sprained ankle." In the latter a fracture of the malleolous had been missed, and in the former some complication—e.g., fracture of the astragalus, fracture of the scaphoid, or separation of the tibio-fibular junction.

Some Conclusions.

I feel almost ashamed of the wearisome reiteration which this account of the legal cases has involved. I confess that I had no idea when I began compiling this list of what were to be the special points revealed by it. I had no intention of specially advocating the use of X rays, and I certainly had no desire to push the wares of the radiologist. This I will make clear presently by saying what he will probably find unacceptable. But first I must point out the striking fact that in no less than 90 per cent. of all cases in which litigation resulted from the treatment of fractures, the main point on which a charge of negligence was based consisted in the absence of X ray examination. And yet there are many medical men to-day who will argue for and even practise an abstention from X ray examination on the grounds that they are quite capable of making a diagnosis without it! The question, however, is not always one of finding or missing the fracture. In one-third of the cases a correct diagnosis of the main fracture had been made, but the existence of some complication or malunion had been missed. And again it has happened twice in 50 cases that in the absence of X ray evidence an unfortunate doctor was at the mercy of another practitioner who subsequently operated upon the case. The actual analysis of the X ray cases is as follows:—

Diagnosis of fracture missed	28 (56%)
Malunion not recognised	6 (12%)
Some complicating injury to bone or joint missed ..	9 (18%)
Allegation by another practitioner, could not be refuted	2 (4%)
Total	45 (90%)

† This paper was written before the Tyndal *v.* Alcock case had been heard.

It seems to me that to make a diagnosis of a bone or joint injury without the X rays is rather like diagnosing cardiac disease without a stethoscope. It can be done sometimes, and in an age before the apparatus was invented it had to be done; but it was guesswork as compared with precision. There was a time when gynæcological diagnosis had to be made without vaginal examination, and a catheter passed for the female without removing the bedclothes, but now we know that it is much better to "look and see" than to "fumble and guess," and so it is in the matter of fractures and the X rays, and certainly the general public, judges, and juries are fully aware of the fact.

A very real difficulty does, however, exist in small towns, villages, and country districts in dealing with injuries which keep the patient bedridden, and particularly when the patient has only moderate means. Efficient portable X ray plant ought to be available wherever it may be needed, and it could be taken about by the ambulance service. The chief difficulty exists in the matter of personnel. It ought to be possible to have a technical expert, not a qualified doctor, in charge of such X ray plant who would work under the direction of a qualified radiologist, exactly as is done at every large hospital. In this way when a patient cannot afford a consultant's fee an X ray examination could be obtained at a moderate cost.

An exact analogy for this procedure exists in the kindred subject of pathological examinations. Sputum, urine, or tumours are sent by the doctor to a clinical investigation laboratory, and a report obtained for from 2*s*. 6*d*. to 10*s*. 6*d*. Probably the ultimate development of this idea of a cheap mobile X ray outfit will require some form of subsidy by the county health authorities.

Adverse Criticism.

Quite apart from this X ray problem, there remains about 10 per cent. of these legal cases in which the chief factor which menaces the medical man's peace of mind and reputation is the accusation or condemnation pronounced against him by another practitioner. Sometimes this accusing colleague is a man of no professional standing, who has nothing to lose and everything to gain by posing before the public as one who is prepared to point out and correct other people's mistakes. But too often he is a man of position, who in an unguarded moment allowed himself to criticise his colleague's conduct without having had any opportunity of hearing that colleague's statement of the case. Having once made this pronouncement he is forced to abide by it, and to fortify it at a later stage when the matter becomes one for litigation. There may be occasions when it becomes the duty of one medical man to make adverse criticisms of another practitioner's diagnosis and treatment, but it surely ought to be regarded as a rule of medical ethics never to make such a criticism without first inviting the accused colleague to some form of written or verbal consultation. Against this menace of an unscrupulous or indiscreet colleague I fear there never can be any protection beyond that afforded by the defence societies. These may guard our pockets, but they cannot ensure either our reputations or our peace of mind.

It is a part of the onerous responsibility of our calling that we have to face dangers and "to suffer the slings and arrows of outrageous fortune." The man who treats fractures must be prepared to risk this every day. He should be no more deterred from pursuing this branch of his work by the menace of ungrateful patients, or unmerited litigation, than the abdominal surgeon should be by the danger he runs of maiming his hands or losing his life by the prick of an infected needle. It ought, I think, to be a matter of consolation to us on those rare occasions when we meet ingratitude and unjust accusation to reflect how many times we really have deserved censure, but have instead received unmerited gratitude.

An Address
ON THE
RELATIONS OF THE
PUBLIC HEALTH SERVICE AND THE PRIVATE PRACTITIONER.

Delivered before the Manchester Medico-Ethical Society

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THE subject of this lecture appealed to me because my professional life has been divided almost equally between the experience of a general practitioner and that of a whole-time medical officer of health. Without the former experience, or most of it, I should have found it impossible to fulfil the functions of my official position with any measure of success. Even though he may have no direct clinical functions (though no member of the public health service can be completely divorced from such functions), it is essential that the administrator of municipal medical services should have an intimate knowledge of the outlook, the difficulties, and the ultimate value to the public of the private practitioner. The period over which my professional memory extends has witnessed an extraordinary development in our conception, not only of medicine and surgery in the purely scientific and technical sense, but in the relations of members of the profession to each other and to the public. After the academic calm of the university and some resident hospital appointments, my first experience of the rough and tumble of general practice was as assistant to a practitioner in a colliery district of Nottinghamshire. It sounds a terrible confession, but this was in the last century. My principal was totally ignorant of what was then modern medicine and surgery; he was also brutal, mannerless, and avaricious. My colleague was an "unqualified assistant" who told me that he had adopted the medical career after an apprenticeship to the "walking-stick and umbrella trade." He did all the midwifery; and the patients loved him. In fact, several victims of puerperal sepsis would have liked to have had his name on their tombstones. He was a nice little man, and when I got the sack, after a somewhat acute difference of opinion with my principal, he urged me to "go into business on my own" and, above all, to develop "a clap and pox connexion." These reminiscences illustrate some of the conditions of private practice in industrial districts in those days. My colleague must have been one of the last of the "unqualified assistants," but he was a much better "doctor" than his so-called "principal." He had sympathy and imagination, and I fear he must have been reduced to "travelling" in drugs or disinfectants. In those days, and for some years afterwards, at all events in working-class practice, doctors in the same districts were not colleagues. They were "opponents," not merely technically but actually. The only good mark I ever earned as an assistant was when I most unprofessionally, but quite unconsciously, "pinched" the patient of one of my principal's "opponents." She was the wife of the principal butcher in the village, and therefore very important. My self-esteem was greatly flattered, and it was only afterwards I learned that their usual attendant had been abandoned because his debit for joints and sausages had long since ceased to balance his contra-account for bottles of medicine. I might add that in that particular practice midwifery fees had been reduced to 9*s*., and there was a "private club" organised by my principal who contracted to attend whole families for 3*s*. 6*d*. a year! This was, of course, the "reductio ad absurdum" of "general practice," and resulted in atrocities to

which no normally constituted doctor could endure to be a party.

The New Spirit in Medical Practice.

It was some years afterwards in Leigh that I first witnessed the breathing of the new spirit, when "opponents" became colleagues, when we formed a medical society, which very soon amalgamated with the Wigan Medical Guild, and subsequently became the Wigan and Leigh Division of the British Medical Association, which I had the honour of representing for some seven years at the representative meeting of the Association.

Medical practice of the type I refer to was in those days a very sordid form of shopkeeping, a ruthless scramble for patients on terms that rendered them, even from the commercial point of view, unremunerative, and made the doctor's claim to professional status simply farcical. Any of the younger generation who would take the trouble to look up the files of the *British Medical Journal* and read the articles and correspondence on the subject of "contract practice," even in the early years of the present century, would obtain an insight into the conditions under which his father or uncles practised which would be a startling revelation, and I hope would enable him to appreciate the fate from which the British Medical Association has saved him.

National Health Insurance and the Mischievous "Eight-Ounce Bottle."

The reconstitution of the Association was decided at the historic Cheltenham meeting in 1903, when the Representative Body was formed, and by 1911 it was strong enough to fight, and very greatly to modify, what is now the National Health Insurance Act. Had the Bill gone through in its original form it would have meant the enslavement of the profession and a perpetuation of the very conditions I have described, the recognition of which was the real "vis a tergo" that forced the popular demand for reform in the medical treatment of the wage-earning classes of the community. But I think it is now admitted that with all its faults the Act has raised the standard of medical practice of this class and improved the status of the doctor. Personally I think the main objection to it is that it has failed to free the doctor from the tyranny of the "bottle of medicine" habit. It has done nothing to educate the public in this respect, and the panel doctor who does not prescribe or dispense a bottle of medicine will find his list of insured patients dwindling, as certainly as I found my private practice evaporating when I tried to educate my patients to abandon this particular form of vice. Unfortunately, we are now spending some three-quarters of a million pounds annually on "drugs and appliances" under the Insurance Act, and I am convinced that probably half a million of that amount is waste, and much of it mischievous. I expect our ancestors who resorted to universal bleeding did more good and less harm to their patients than we do by encouraging or maintaining the superstition whose outward and visible sign is the eight-ounce bottle.

Team-work in Medical Practice.

There are other factors which tend profoundly to modify the conditions of private practice, and one of them is our modern and inevitable dependence on the pathological laboratory for diagnosis. It is a development of this that causes many of the well-to-do classes to resort to places where they obtain not only diagnosis but treatment, not from a doctor, as of yore, but from a team of specialists. It is quite certain that as this form of medical treatment becomes fashionable for the wealthy its provision, more or less at the public expense, will be demanded by and for the poorer classes of the community. In fact, already some of our voluntary hospitals are being reorganised more or less on these lines. Already we have hospitals with a "surgical section" presided over by a chief who coördinates the work of a "team" of specialists, and is paid a salary for doing so.

In the meantime the health services organised by the State through the local authorities have undergone an enormous change, and in a direction which causes them to encroach more and more on the sphere of the private practitioner and the consultant.

The result of the "industrial revolution" was to create unheard-of wealth, and an enormous increase of population. What had been mainly an agricultural population distributed over the country and dependent on villages and country towns for markets and crafts suddenly underwent a process of clotting. Industrial towns grew up like foul weeds. The demand for cheap labour, and even child-labour, was inexhaustible. Anyone who owned a few square yards of land in the neighbourhood of any industry built a house on it. There were no restrictions on the exploitation of poverty by wealth. People prated about the "sanctity of human life" well knowing that men, women, and children were much cheaper than turnips, and a crop that raised itself without any trouble to anybody else. By the middle of the nineteenth century conditions had become so appalling and death-rates so alarming that the nation awoke to the necessity of taking this problem seriously in hand.

Public Health Legislation Following the Industrial Revolution.

The great Lord Shaftesbury had already won his battle over the first Factory Act and had at least emancipated infancy from one of the most ghastly forms of slavery. Chadwick began to preach sanitation, and the Towns Improvement Clauses Act was passed in 1847. It was the forerunner of much public health legislation. In 1870 the Education Act was passed, and five years later a great deal of scrappy public health legislation was consolidated in the great Public Health Act of 1875. Unfortunately, by that time the mischief was done. We had created a mess which we have by no means cleared up yet. The Act of 1875 very naturally and properly dealt almost altogether with the *environment* of the people. Only in the case of "dangerous infectious disease" was the individual considered, and even then he was not considered as an individual but as a possible danger to the rest of the community. It enabled, and in fact compelled, local authorities to provide adequate water-supplies, to make and cleanse roads and streets, to compel the "abatement of nuisances," and to make at least a beginning of clearing up the Augean stables bequeathed to us by the "industrial revolution." It was followed by a bewildering mass of legislation, various amending Acts, the Food and Drugs Acts, new Factory Acts, Acts dealing with the Notification and Prevention of Infectious Diseases, and all the housing legislation that began with the Act of 1890. There was a flood of legislation, and Parliament even concerned itself with details of the conditions under which rag flock was produced and handled!

Activity in the Twentieth Century.

At the end of the century the work was certainly not half done. We may perhaps claim that it was "well begun," but we can certainly claim no more. Nevertheless, with the beginning of the present century a very marked change came over the spirit of the public health movement, and the public demanded that the municipalities should turn their attention more and more to the direct care of the individual. By that time the campaign against tuberculosis had been in existence for a considerable number of years, but the problem of the infantile mortality-rate had not been seriously tackled, and this mortality had not at all followed the general mortality-rate in its downward career. It was not until the beginning of the century that child welfare work was generally established on the lines with which we are now so familiar, which have resulted in so startling a reduction in infant mortality. Its

proper corollary, the study and care of prenatal conditions, is the most recent growth of public activities. It is since the war that the public conscience has been aroused to the terrible havoc that was being wrought in the present generation and the threat to the future of the race involved in the prevalence of venereal disease. The control of these diseases also has been "municipalised" mainly, I regret to say, on a curative and not on a preventive basis. Again, it was towards the close of the first decade of the century that the Education (Administrative Provisions) Act was passed which established the school medical service, with all its enormous influence for good. Of course, our environmental work has not been neglected. Enormous arrears in the matter of housing have had to be overtaken at a time when the financial burden of the nation is greater than anything ever contemplated by our forefathers, and it should be remembered that in this matter of housing we are doing much more than overtaking arrears. We are aiming at a standard of health and amenity that would have seemed not merely Utopian but insane to the makers of the industrial revolution. We limit our municipal housing schemes to 12 houses per acre, and in some cases we are displacing people from slums where houses are huddled together at the rate of 200 per acre! Every civilised community is now rapidly eliminating such abominable relics of the Middle Ages as the "conservancy" system of disposal of excreta, while we are insisting that backyards shall be paved and existing houses maintained in a state of reasonable repair. Nevertheless, it is quite true, as Sir George Newman said some six years ago, that the centre of gravity of public health administration has shifted from the environment towards the individual, and in this shifting I think there has sometimes been a tendency to concentrate on the cure of end-results at the cost of prevention. Recent results in our antituberculosis campaign have been most remarkable, but in the early enthusiasm for "sanatorium" treatment in elaborate and costly institutions there was an enormous expenditure of public funds without any commensurate result. Education and rational preventive measures would in time make many of our venereal disease clinics an anachronism. Our failure to eliminate rickets is due not to want of knowledge of its cause or of the methods of prevention, but to our inability to get this knowledge home to the very class of people who most require it.

Effect of Public Health Enterprise on Private Practice.

In the meantime all this public work has made the most terrible inroads on the work and the earning capacity of the private practitioner. He has very largely lost his attendance on the expectant mother, and his maternity practice is now largely in the hands of highly qualified midwives. He has lost the infants and the school-children; the tuberculous and the sufferers from venereal disease. There is now a tendency, which becomes more marked every year, to demand the isolation, and therefore the municipalisation, of pneumonia, of measles, and of whooping-cough. Very soon we may acquire some accurate knowledge of the causes of that enormous group of more or less crippling conditions now lumped together in the meaningless mediæval category of "rheumatism," and still absurdly classified in the "international list" as "diseases of the organs of locomotion"! Some of these, if not all of them, will certainly come to be regarded as "preventable diseases," and to that extent the doctor's purse will again be depleted.

A deep resentment against this encroachment on the part of men who have gone through an arduous and expensive training seems to me quite natural, but not necessarily wise. As we have seen, the conditions of medical practice have changed. The majority of members of the public still want their own doctor, who "knows their constitution." They want his friendly manner, his sympathy, and, above all, his bottle of medicine—if possible," the same as they had last time." With the possible exception of the bottle of medicine, all these are good things, and I daresay when my time comes I shall welcome the presence at my bedside of the successor of Trollope's Dr. Fillgrave, without whose sanction no one could die respectably. But the custodians of the people, their politicians, the insurance companies, and the so-called "friendly societies" will not, if they can help it, permit the perpetuation of these luxuries. The statesman sees that under modern conditions the nation can no longer afford avoidable invalidity, even though the medical profession may still have a vested interest in disease.

It is useless for us to protest against these economic tendencies or to attempt to oppose them. I believe that with the lessened incidence of disease, and the increase of "team work" in the profession, the nation will not be able in future to support as many doctors as it has done in the past, and that we should endeavour to limit the entries of medical students by demanding a much higher standard of preliminary general education than we have done in the past. I think that some experience of "general practice" should be compulsory before any form of specialisation is permitted, and that the profession should at least try to reorganise itself from within so as to give every member an interest in the preventive side of his work. In Sheffield, since I have been responsible for it, the clinical part of our prenatal and child welfare work has been carried out entirely by a staff of general practitioners working on a part-time basis; and, judging by our results and the smoothness of the administrative working, I see no reason to wish to change it. Our venereal disease clinics are operated by part-time specialists, and I think the future of preventive work may, if they choose, be largely in the hands of private practitioners, provided they are prepared to maintain the value of public work by the standard of their private practice.

UNRECOGNISED TOXIC SUBSTANCES IN HUMAN FÆCES.*

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With an Account of Experiments by

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This communication is intended to be frankly provocative and suggestive; to provoke thought and commentary from teachers of clinical medicine on the correctness of the views expressed, and to suggest to practitioners the necessity in the interests of medical progress of their independent thought and observation on facts which come daily under their own notice. The late Sir James Mackenzie divided clinicians into two groups—those who do not know, and know that they do not know, and those who do not know, and do not know that they do not know. I write frankly as a member of the first group. Stated shortly, my thesis is: the urgent necessity at the present time of clinicians directing their attention to the teaching of Bouchard, Metchnikoff, Arbuthnot Lane, and William Hunter. Few will deny the present unsatisfactory state of our knowledge of the ætiology of most common medical disorders that fill our hospital wards to-day, our comparative helplessness in curing them, or our too limited endeavour along lines of preventive treatment. Much attention has been directed for many years, and with marked success, to making more complete our knowledge of the physical signs of disease, to refinement in diagnosis, and to research work, both clinical and laboratory, dealing with the end-products of disease. Too little

* A paper read at the Medico-Chirurgical Society of Edinburgh on Jan. 18th.

attention has been directed to the search for any fundamental principles at work in inducing the diseased states, the recognition of which would simplify and clarify our present elaborate classification of diseases and would pave the way for a more rational and successful therapy. My observations, over a period of nearly 30 years, have led me to think that the teaching of the above authorities, to which little serious attention is now directed by clinicians, furnishes a key both to the simplification of the present classification of disease and to much greater success in its treatment.

Bouchard, Metchnikoff, Arbuthnot Lane, William Hunter.

Bouchard directed his attention to the problem of the toxicity of the urine and fæces, and its significance in relation to the æciology of various diseases. In emphasising as he did the influence of the liver and bile in controlling the abnormal fermentative and putrefactive processes, of which he found evidence in the fæces, he was in agreement with the views of many distinguished medical writers in the past who arrived at the same conclusion on purely clinical grounds. Bouchard's work on Auto-intoxication was published over 35 years ago; the great value and significance of much of his work has not yet been adequately recognised. Metchnikoff, approaching the subject from the wide standpoint of a biologist of the foremost rank, made an extensive study of nutrition and degeneration as seen in lower plant and animal life. The results of his researches led him to the conclusion that a slow and insidious absorption of poisons from the large intestine was a factor of primary importance in inducing the degenerative and sclerotic changes characteristic of most common diseases in man. His conclusions, if established, are of far-reaching importance. Little attention has so far been directed towards proving or disproving their value. Arbuthnot Lane, from an independent clinical study of the problems, is in general agreement with Metchnikoff's teaching as to the profound importance of the large intestine as the main source of origin of diseases. It is probably not too much to say that his powerful advocacy of his well-known views is slowly exerting a marked influence on many thoughtful and open-minded members of the profession. Opinions on the value of Arbuthnot Lane's teaching are, however, strangely divided. On the one hand, we find Sir William Milligan, in a preface to a recently published useful book on Chronic Constipation written by a layman, writing as follows:—

> "Dedicated as the work is to that distinguished Surgeon and Founder of the New Health Society, Sir Arbuthnot Lane, to whose untiring efforts in the cause of Health the public owe so much, the part played by the author in presenting so much valuable information should not be allowed to pass without due acknowledgment and gratitude."

On the other hand, it would appear from Sir Thomas Horder's MacAlister lecture on Diet and Dietists that this commendation is another "glaring instance of qualified practitioners giving 'cover' to unqualified men." The time seems ripe for the profession to determine in which direction the line of progress lies. The work of William Hunter should also be referred to. Associated as his name so honourably is with work of great value on the anæmias, it is not commonly recognised that his pioneer researches have far-reaching significance and value in a much wider field of clinical medicine. His work on the rôle of auto-infection from the intestinal tract, secondary to oral sepsis, brings it into close relation with the foregoing. In a recent appreciative reference to Hunter's work and the scanty recognition it has received from the profession, Sir Berkeley Moynihan, speaking of the opposition originally offered to Lister's epoch-making researches, submitted as an explanation that "some minds are impervious to novelty; truth seemed to be bent at an angle as it entered the rather denser medium of their minds." In this connexion it might be added that the great significance and value to clinical medicine of Moynihan's brilliant contributions to surgery have so far not yet received the thoughtful consideration that is due. It is only right to add that in some of the special departments of medicine increasing importance has been attached in recent years to the probable rôle of an alimentary toxæmia in inducing various common disorders. A reference to several modern text-books on dermatology and ophthalmology, for instance, shows that many specialists in these departments of medicine are satisfied on general clinical grounds that some derangement of the bowel, of a nature not yet ascertained, is primarily responsible for some of the common diseases coming under their observation. This emphasises the necessity of the subject receiving more attention at the hands of the general physician.

Erroneous Teaching re Normal Fæces.

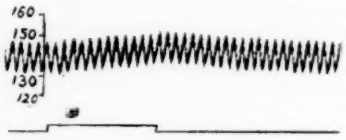
It would appear from the literature that the chief difficulty in the way of leading medical writers recognising the importance of what may, for want of a better term, be called alimentary toxæmia, lies in the "absence of proof." No one has adduced any exact experimental evidence that the fæces contain a substance or substances which can be proved by laboratory tests to exert a toxic action. Neither has any laboratory worker been able to produce a substance in a test-tube and say "Here is the toxic substance." On a question that is so largely clinical it is doubtful how far these criticisms have the validity claimed for them, but in any event their discussion is hardly necessary, and for this reason. The chief factor, which has arrested progress of our knowledge of the subject for so many years, is the profoundly erroneous views held by clinical teachers in general as to the condition of the fæces in health. The fæces of a healthy adult man on a judiciously planned mixed dietary are, like those of many of the lower animals, practically odourless; they show little or no sign of abnormal fermentation or putrefaction. The unpleasant odour which results from the administration of a liver pill, followed by a saline, should not be regarded as indicating that under normal conditions putrefactive changes of a gross nature are physiological. It should rather be interpreted as an all-important indication of the special importance of the liver and bile function in regulating the processes of primary digestion; it is possible that it should be interpreted as indicating that the judiciously planned mixed dietary referred to above, though excellent for all practical purposes, is not so physiologically perfect as it might be. A clinically accurate method of determining whether a bowel is reasonably clean or not is effected by the use of the enema syringe. In health, if the bowel is washed out by an enema of plain water, two and a half pints or thereby, the fluid will be immediately returned with the contents of the lower colon; if a second wash-out of the same amount be then given the fluid will be returned and it has the following characteristics: it will be practically clear, or of a light straw colour, it will be entirely free from odour, there is no deposit, or, at most, fragmentary traces of fæcal matter and mucus, are present; if a drop of the fluid is stained by Gram's method very few, if any, bacteria are observed. This condition of affairs is very rarely seen in hospital practice. On the contrary, it is no exaggeration to say that in probably 99 out of 100 ordinary hospital patients the second wash-out from the bowel is, on admission, a highly feculent, offensive excretion, dark brown in colour, with a copious fæcal deposit, and a Gram-stained film of a drop of the fluid presents a picture, which in regard to the number of bacteria present, is often indistinguishable from that of the first wash-out. This fact is itself conclusive evidence that, apart from any qualitative changes in the flora, there is an enormous increase of bacterial activity in the bowel, with great potential power of injury to the tissues. (In regard to the presence of bacteria in the fæces it may be stated that the writer showed conclusively some years ago that the traditional teaching as to the

vast majority of bacteria in the fæces being dead is erroneous.) This highly putrefactive state of the bowel is so universal in hospital patients that it has misled both medical men and nurses as to the normal. An illustration of the error into which clinical teachers have fallen on this subject may be quoted. Writing on the subject of the possible relations of Alimentary Toxæmias to Migraine, Dr. Hurst says :—

"We have never found any abnormality by means of test-meals, microscopical, chemical, and bacteriological examination of the stools and urine, radiological examination of the alimentary tract, lævulose test for hepatic inefficiency, estimation of blood-sugar, urea, uric acid, blood counts, and cutaneous tests for protein sensitisation."

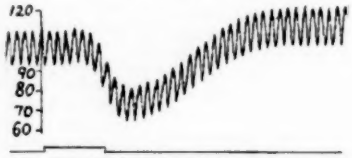
This provides at once a good example of the thoroughness and inefficacy of some modern methods of investigation. No reference is made to the general appearance and highly offensive nature of the stool which would be amply proved if the test outlined above were applied. In a considerable experience of such cases I can confidently affirm that if the practitioner makes sound use of his unaided senses the more elaborate tests referred to above may, as a rule, be disregarded. And it is of practical moment to know that there is a most important relationship between the time required to restore the bowel to a natural state of cleanliness and the duration of the symptoms of the disease.

FIG. 1.



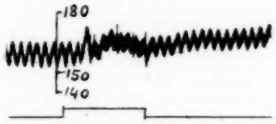
Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 10 c.cm. of pigmented extract from the content of cæcum of sheep. Note no change. Scale = blood pressure in mm. of mercury.

FIG. 2.



Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 4 c.cm. of the extract from the content of large intestine of cat. Note the fall of blood pressure from 94 to 64 mm. of mercury. Scale = blood pressure in mm. of mercury.

FIG. 3.



Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 20 c.cm. of pigmented extract from the content of large bowel (first wash-out) of an apparently healthy individual. Note no change. Scale = blood pressure in mm. of mercury.

Toxins in Human Fæces.

If the teaching of the above writers is correct, it is reasonable to expect that modern methods of laboratory investigation should reveal conclusive evidence in its favour. In recent months I have had an opportunity of testing this. I was interested to learn some months ago that Dr. P. De, who had attached himself to my ward and laboratory for the study of some of the problems referred to in this paper, had devoted himself to the investigation of pharmacological problems in the Pharmacological Department of Edinburgh University. He fell in with my suggestion that he should test the pharmacological action of extracts of the fæces of lower animals, apparently healthy men, and of patients in the wards. By arrangement, the source of the individual extracts in the earlier series of experiments was not known to him prior to the determination of the result. The extracts were prepared as follows. In the lower animals six ounces approximately of fæcal matter were collected, care being taken to prevent admixture with urine. The specimens examined were for the most part obtained from animals which were under my own observation, the dietary being known; in the pig and sheep the contents of the bowel were collected by me personally at the slaughter-house from newly killed animals. The fæces of a healthy judiciously fed horse, pig, and sheep are virtually odourless; in the cow the fæces may be odourless, but frequently show evidence of slight putrefaction; the fæces of the cat emit a strong putrefactive odour. The fæces were extracted with plain tap water, repeated agitation being carried out, and subsequently filtered. The filtrate obtained varied in colour, some extracts being highly pigmented, others much less so. The extract was then filtered by passing through a porcelain filter to remove the bacteria present, and its sterility subsequently determined by bacteriological examination. This provided the filtrate referred to as the pigmented extract. In many instances the pigment matter in the extract was removed by charcoal, in order to determine whether any reaction obtained was due to the presence of bile pigment; such filtrate is referred to as non-pigmented extract. The fæces of the human subject were treated similarly, observations being made on the filtrate obtained from the use of a first enema of 2–2½ pints of plain water—control observations were made with distilled water and normal saline—and from a second injection of a similar nature administered after the first had been returned. Some additional observations were made on the action of an extract prepared from fluids obtained after 12–13 pints in all had been administered, but these are at the moment of subsidiary interest.

Experiments were directed to ascertain the following points: 1. The effects, if any, on the blood pressure of cats, of the original extracts of the fæces, as described above (pigmented extracts). 2. The effects if any, of the same extracts after removal of the pigment by charcoal (pigment-free extracts). 3. Any modification of the action induced by subjecting the extract to boiling for ten minutes.

EXPERIMENTS BY DR. DE.

A number of extracts prepared from the bowel wash-outs of men in health and disease and from the fæces of lower animals were tested to observe their effect on blood pressure of cats. The extracts tested were clear fluids, free from any suspended matter and varied in colour from very light straw to deep amber; the extracts from the first wash-out were generally darker in colour than those from the second. The reaction of the solutions was mostly on the alkaline side, the pH varying from 6·5 to 8·9. The extracts from which the pigmented matter had been removed by charcoal were perfectly clear solutions. The experiments were done on cats weighing generally from 2·5 to 3 kg. The animals were anæsthetised with paraldehyde and ether. The injections were given slowly, and so far as possible at a uniform rate, into the jugular vein, and the carotid blood pressure was recorded in the usual manner.

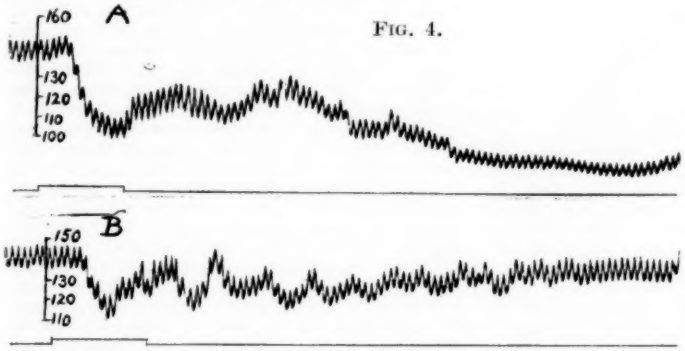
To obviate any error due to the amount of fluid injected, control observations were made with similar amounts of distilled water, tap water or saline. In the course of the experiment it was deemed advisable to test the effects of administration of the extract by injection into the femoral vein. The amount injected ranged from 1 c.cm. to 20 c.cm., and in a few cases to 30 c.cm.

Experiments with extracts from the fæces of animals.—Observations were made on the effects of extracts prepared from the fæces of sheep, pig, horse, cow, calf, and cat. The extracts from sheep (pH 7·6), pig (pH 8·1), and horse (pH 7·5–7·6) gave no fall in the blood pressure (Fig. 1); 20 c.cm. of an extract from cow (pH 7·5) and calf (pH 7·3), and 10 c.cm. of extract from cat (pH 7·1) reduced the

systolic blood pressure from 137 to 80, 130 to 52, and 112 to 63 mm. of mercury respectively (Fig. 2). The depressor effect of the extract from cat was to a marked extent destroyed by boiling the extract in water bath for 10 minutes.

Extracts from apparently healthy stools.—Extracts from three apparently healthy subjects were tested. The extracts

FIG. 4.



Cat. Paraldehyde and ether. Blood pressure. A shows the effect of injection of 10 c.cm. of the pigmented extract from the first wash-out of a case of melancholia. Note the marked fall in pressure, slowly recovered from. B shows the effect of injection of 10 c.cm. of the same extract after boiling in water bath for 10 minutes. Note the reduction in the depressor effect. Scale = blood pressure in mm. of mercury.

(pH 6·5 to 7·6) caused a very slight or no fall of blood pressure when 20 c.cm. was injected (Fig. 3). Boiling did not materially alter the action.

Extracts from unhealthy bowel wash-outs.—Observations were made with extracts of the fæces from cases of melancholia, pernicious anæmia (pH 6·7), dysentery (pH 8·1), chorea (pH 8·4–8·9), disseminated sclerosis (pH 6·7), heart disease with impaired digestion (pH 6·5), high blood pressure (systolic blood pressure 175 in an individual of 65 years), (pH 6·9–7·0), bulbar paralysis, jaundice, diabetes mellitus (pH 6·5–6·6), subacute nephritis (pH 7·2–8·9), and pleurisy. These showed a fall of blood pressure. The results were in marked contrast to those obtained from the apparently normal subjects. A distinct lowering of the blood pressure was induced as illustrated in the figures. Fig. 4A illustrates the effect of injection of 10 c.cm. of the pigmented extract from the first wash-out of a case of melancholia. The blood pressure fell from 138 to 100 mm. of mercury, and the recovery was slow. Fig. 5 shows the effect of injection of 20 c.cm. of the pigmented extract from the first wash-out of a case of dysentery. The reduction of the blood pressure in this case was from 130 to 74 mm. of mercury. Fig. 6A shows the effect of injection of 10 c.cm. of extract from a case of heart disease with impaired digestion. A marked fall of blood pressure from 132 to 80 mm. of mercury was seen in this case also. Fig. 7 illustrates the fall of blood pressure with 1 c.cm. of extract from a case of pernicious anæmia. It shows the fall of blood pressure from 180 to 103 mm. of mercury with the extract from the second wash-out, while with the extract from the first wash-out the fall of blood pressure was from 163 to 130 mm. of mercury.

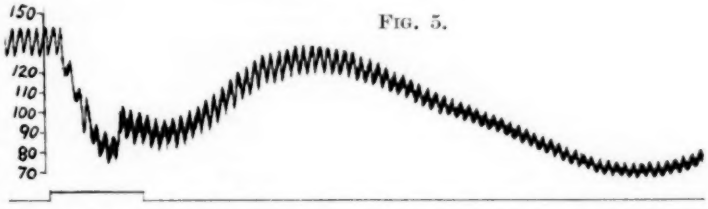
Effect of the filtrate from which pigment has been removed by charcoal.—In the cases of jaundice, dysentery, melancholia, and subacute nephritis, no fall in the blood pressure was obtained. Fig. 5 shows the effect in a case of dysentery with a dose of 20 c.cm. of the original extract.

Effect of the filtrate after boiling.—The extracts from cases of pleurisy, dysentery, diabetes mellitus, pernicious anæmia, and heart disease with impaired digestion, when boiled in a water bath for 10 minutes, showed no change in the depressor effect when compared with the original solution. Figs. 6A and B show the effect of injection of 10 c.cm. of the extract, before and after boiling, from a case of heart disease. In the subjects with chorea, melancholia, disseminated sclerosis, and high blood pressure it appears that a part of the depressor action was destroyed by such boiling. Figs. 4A and B show the comparative effect in a case of melancholia when 10 c.cm. was injected. In a case of subacute nephritis the depressor action was completely destroyed by boiling.

Extract from first and second wash-out.—The extract from the first wash-out generally gave a greater fall of blood pressure than that from the second. Exceptions to this were, however, noticed in the case of pernicious anæmia.

Effect of injection into femoral vein.—The results of injection of similar doses of the extract into the femoral vein showed practically the same effect as that of injection into the jugular vein.

FIG. 5.

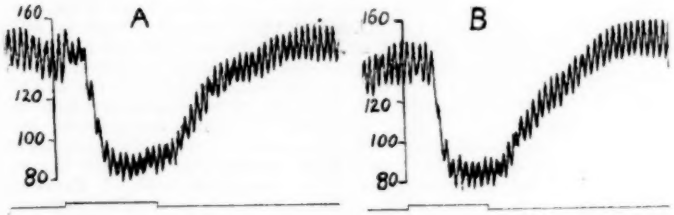


Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 20 c.cm. of the pigmented extract from the first wash-out of a case of dysentery. Note the marked fall in the blood pressure slowly recovered from. Scale = blood pressure in mm. of mercury.

Summary.

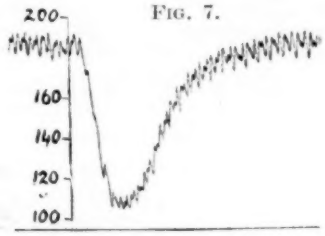
(1) The extracts from the fæces of sheep, horse, and pig gave no fall of blood pressure; those from cow, calf, and cat produced a marked fall in the blood pressure. (2) The extracts from the contents of the apparently healthy bowel gave very little or no fall of the blood pressure. (3) A fall of blood pressure was obtained with the extracts in the various diseases investigated. (4) The depressor effect obtained by injection into the jugular vein was

FIG. 6.



Cat. Paraldehyde and ether. Blood pressure. A shows the effect of injection of 10 c.cm. of extract from a case of heart disease with impaired digestion. Note the marked fall of blood pressure. Time = 2 seconds. B shows the effect of 10 c.cm. of the same extract after boiling in a water bath for 10 minutes. The depressor effect has not been altered by boiling. Scale = blood pressure in mm. of mercury.

FIG. 7.



Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 1 c.cm. pigmented extract from the second wash-out of a case of pernicious anæmia. Note the fall in the blood pressure. Scale = blood pressure in mm. of mercury.

equally obtained when the fluid was injected into the femoral vein. (5) The varying results recorded from the injection of the original extract and the extract, as obtained by treatment with charcoal and by boiling, appear to indicate that there is more than one toxic substance present.

Conclusions.

These experiments prove the existence of a hitherto unrecognised toxic substance or substances in the fæces in the different diseases investigated. The absence or—keeping in view the limitations in the amount of extract employed—relative absence of this substance as observed in lower animals, opens up questions of great physiological and clinical interest. These are enhanced by the results obtained from the examination of apparently healthy adult subjects living on a judiciously planned mixed dietary, the criteria of health being the complete absence of any symptoms or signs of disease, *with the lower bowel in the naturally clean condition intended by nature.* Without speculating on the nature of this toxic substance or substances, difficult and complex questions arise in regard to variations in the direction of abnormal manufacture of the toxic principles, their undue retention, and alteration in the absorptive power of the lining membrane of the bowel. The results of the experiments recall the researches of Dale and Barger, Mellanby, Lewis, and others, on histamine and histamine-like bodies present in the lining membrane of the bowel; their possible relationship to various researches on abnormal proteose substances also require investigation.

(1) For the first time a powerful toxic substance has been shown in the fæces of the diseases studied, in which the unaided senses revealed excessive putrefaction in the stools. (2) This substance—or substances—was absent or relatively absent in the fæces of lower animals and of men, where the bowel was normally clean. (3) An important ætiological relationship exists between the unhealthy state of the lower bowel and the disease, revealed by the results of treatment directed towards restoring the bowel as far as possible to its natural state of cleanliness. (4) The necessity of attention being directed to this much-neglected line of investigation; the assistance of practitioners is in the first instance probably of more importance than that of the specialist or laboratory worker. (5) The study of disease on the lines suggested accentuates the need for a closer study of the influence of heredity and of variations in the individual reaction to disease; it also involves the closer application of Listerian principles to medicine as opposed to surgery.

I have much pleasure expressing my cordial appreciation of the admirable facilities afforded by Prof. Clark for the work carried out in his department and for various helpful suggestions; also my indebtedness to Mr. T. E. Condon, of the Pharmacological Department, for valuable assistance.

THE RELATIVE FREQUENCY OF THE VARIOUS POSITIONS OF THE VERMIFORM APPENDIX

AS ASCERTAINED BY AN ANALYSIS OF 5000 CASES.*

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THE literature concerning the position of the cæcum and appendix is vast; but notwithstanding the excellent work which has already been done, there is a general feeling that the individual experience of many surgeons and anatomists does not conform with the statements that have been published and accepted with regard to the relative frequency of the different positions of these organs. It was on this account that in 1914 we began to make careful observations upon the position of the appendix as seen in the operating theatre, post-mortem room, and dissecting rooms, and by the middle of this year the total number of cases in which the position of the appendix had been recorded amounted to 5000. The cases naturally include, in addition to those in which the normal position was unaffected by inflammatory adhesions or traction bands, the usual cases met with in surgical practice—for example, acute and chronic cases of appendicitis. We have, however, thought it unnecessary to complicate the classification by introducing accidental factors into the statistics. The influence of inflammation in altering the normal position of the appendix is not of sufficient importance to interfere with the general value of statistics. As the position of an inflamed and gangrenous appendix and its relationship to adjoining parts frequently determine the site of an abscess, it is important that the surgeon should have some knowledge of the relative frequency of the various situations in which the appendix may be found, and its relationship to the surrounding pouches and folds of peritoneum.

A good deal of misconception arises from the use of certain terms for the folds of peritoneum and fossæ around the cæcum and appendix. As it is of the greatest importance that these names should denote a definite condition, we have thought it necessary to define clearly in the following table what we understand by the terms employed in this article.

Table showing Positions of the Appendix, with their Relative Frequency.

Positions of appendix.	No. of cases.	Per cent.
1. Anterior or pre-ileal	47	0·94
2. "Splenic" or post-ileal	25	0·5
3. "Pelvic," on psoas muscle, near or hanging over the brim of the pelvis	1606	32·11
4. Subcæcal, beneath the "caput cæci"	101	2·02
5. Post-cæcal and retrocolic	3219	64·38
6. Ectopic	2	0·04

The Various Sites of the Appendix and Associated Peritoneal Conditions.

1. The *anterior* or *pre-ileal* position is rare (0·94 per cent.). The tip of the appendix is directed upwards and forwards over the terminal part of the ileum. The meso-appendix is long and there is usually an ileo-cæcal fold. Should the appendix become inflamed, abscess may occur either in the space included between the meso-appendix and the terminal part of the ileum, or adhesions may form between it and adjacent coils of small intestine or omentum.

2. *Splenic* or *post-ileal* position is even rarer (0·5 per cent.); only 25 instances were observed in the 5000 cases. This is the well-known position described by Treves and regarded by some authors as the most common. The appendix lies in the ileo-cæcal fossa, under cover of the terminal part of the ileum. An ileo-cæcal fold (the bloodless fold of Treves), which may contain lobules of fat, is usually present. In some cases this forms a flattened fold with a free rounded border resembling a large appendix epiploica; at other times it is a crescentic fold with a sharp free border, directed to the left and passing from the anterior aspect of the terminal part of the ileum and the adjacent part of the cæcum to the root of the appendix or its mesentery. If inflammation of the appendix should occur when it is in this position, mesenteric thrombosis, leading to portal pyæmia, is likely to ensue. This we regard as the most dangerous position the appendix may assume.

3. The *pelvic or descending* position occurs in 32·11 per cent. of our cases. The tip of the appendix

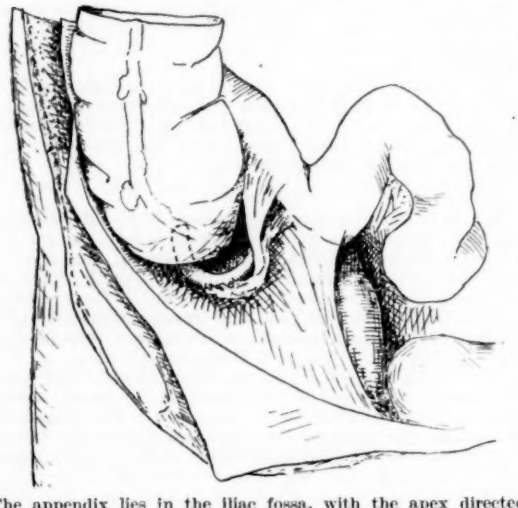
* Abstract of a paper read before the Anatomical Society of Great Britain and Ireland on Nov. 25th, 1927.

is usually directed downwards on the psoas and may hang over the brim of the pelvis; it is not infrequently associated with a genito-mesenteric fold which causes a downward kink of the terminal part of the ileum. This may lead to obstruction with resulting dilatation of the proximal portion of the gut, as originally pointed out by Arbuthnot Lane. It is probable that the position of the appendix in these cases is determined by the genito-mesenteric fold, which lies to its left side and passes vertically downwards from the posterior aspect of the ileum or left side of the mesentery to the internal abdominal ring, or, in the female, to the ovary. This relationship is important in connexion with the establishment of a secondary connexion between the lymphatic vessels of the ovary and appendix. Should inflammation ensue in an appendix overhanging the pelvic brim in a female, it may become adherent to the right ovary, and pain may occur in the right iliac fossa during menstruation. Such an appendix may also become adherent to either bladder or rectum and be the cause of painful micturition or defæcation; and should an abscess form it may discharge into the bladder or rectum.

4. The *subcæcal* position of the appendix (Fig. 1) beneath the caput cæci was present in 2·02 per cent. of cases. The appendix with its mesentery is twisted in a clockwise direction from left to right and its tip is usually directed upwards. If an ileo-cæcal fold is present it may cover the root of the appendix. In the specimen illustrated a genito-mesenteric fold was present, with a downward kink of the ileum. If inflammation should take place with the appendix in this position an abscess may form, and may discharge through the fascia iliaca into the substance of the iliacus muscle. Such a condition may give rise to spasm of the muscle and consequent flexion of the hip-joint.

5. The "*post-cæcal*" and *retrocolic* positions. This

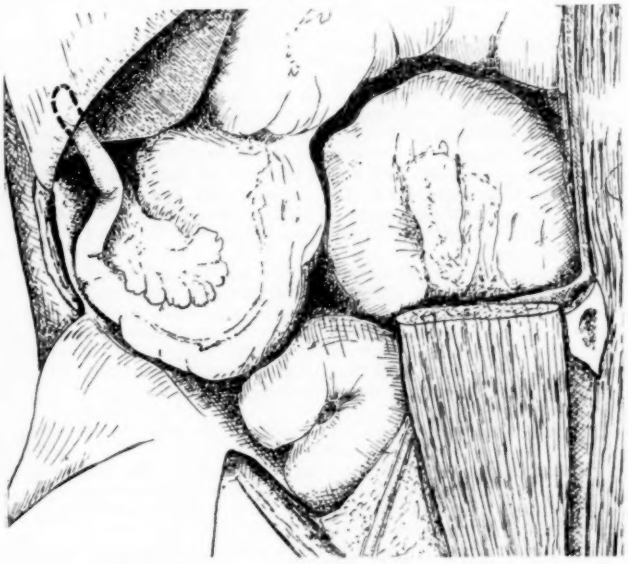
FIG. 1.—*Subcæcal Position.*



The appendix lies in the iliac fossa, with the apex directed upwards. There is a well-marked ileo-cæcal fold containing fat, which lies in front of the root of the appendix and its mesentery. There is also a genito-mesenteric fold, which has produced a downward "kink" of the terminal part of the ileum.

is the most common situation of the appendix. In our series there were 3219 cases representing 64·38 per cent. This is in accordance with the general experience of surgeons and anatomists at the present time, but differs markedly from the statistics which have been published by previous writers and quoted in many of the standard text-books. This may be accounted for, partly by the difficulties which arise from one group overlapping another, and partly from the subdivision of the posterior positions, which are essentially the same, into two or more groups, thus masking the true frequency of the most common type. For instance, the tip of the appendix may be directed towards the spleen and thus be classed as splenic or post-ileal in position. It is, however, essentially retrocæcal in position. As stated in a previous communication,[1] the retrocæcal type of appendix may be found: (*a*) free in a post-cæcal or retrocolic pouch of peritoneum; (*b*) held in contact with the cæcum or ascending colon by a short mesentery; (*c*) adherent to the cæcum or colon, which, with the appendix, forms the anterior wall of a retrocolic pouch of peritoneum; (*d*) behind the cæcum and ascending colon, but, owing to obliteration of the retrocolic pouch, entirely extraperitoneal.

FIG. 2.—*Ectopic Position: Prehepatic.*



The tip of the appendix is directed upward beneath the right half of the subcostal arch, and superficial to the right lobe of the liver. The cæcum is conical, and gradually tapers into the root of the appendix. It lies in the right lumbar region, and the ascending colon, which is superficial in position and very short, passes without any sharp hepatic flexure directly into the transverse colon. There is a well-marked ileo-cæcal fold containing lobulated fat.

There is no doubt that inflammatory changes occurring in the appendix may cause a perfectly free appendix in position (*a*) to become adherent to the cæcum and so come into subdivision (*c*). There is also, however, a considerable amount of variation in the degree to which the cæcum and ascending colon become adherent to the posterior abdominal wall and iliac fossa in the course of normal development, apart from any secondary adhesion caused by inflammation.

6. The ectopic position of the appendix is excessively rare; only two cases have occurred in our series. In one the appendix was prehepatic in position (Fig. 2), while in the other it was lying free, with the cæcum below the stomach and transverse colon.

[1] British Journal of Surgery, 1924, xi., 503.

THE RELATION OF DEFICIENCY OF VITAMIN B TO ATONY OF THE STOMACH.

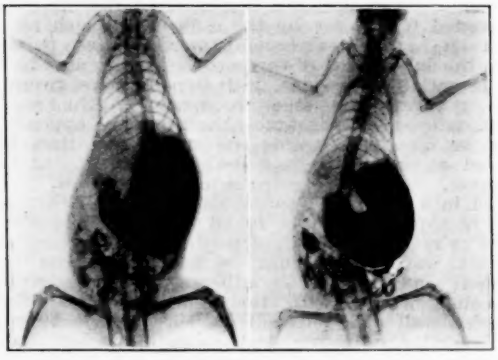
BY M. J. ROWLANDS, M.D. BRUX., M.R.C.S. ENG.,
AND
ETHEL BROWNING, M.D. LIVERP.

IN the course of work recently reported to the Royal Society of Medicine [1] we noticed that in a number of deficiently fed animals the stomach was greatly distended. As we were concentrating our research on the cæcum and colon we were at that time unable to follow up this observation, but later we decided to look for the cause of the gastric dilatation in view of the common occurrence of this condition in human beings.

We began our investigation by placing five rats on a deficiency diet. In our previous research we had taken 50 as a unit, but it was impossible to take such a large number for this piece of work because an anæsthetic for each X ray has to be given. We considered, however, that five experimental animals and five controls would be sufficient to justify our conclusions.

The rats used were bred by ourselves, so that we knew their ages and their history from birth; the ages and previous diets of rats purchased from a dealer are usually unknown. The rats used for this work had been fed from a fortnight old on a full vitamin diet, but had been kept in cages. Their weight was 120 g. and their experimental diet was as follows: rice starch, 650 g.; butter, 100 g.; devitaminised casein, 200 g.; salt mixture, 50 g. Owing to the difficulty of keeping rats on this diet for more than three or four weeks we decided to add 1 per cent. yeast extract, which enabled us to keep them alive for six weeks. At the end of this period the rats

FIG. 1. FIG. 2.



Radiogram of rats fed on a diet deficient in vitamin B, showing ptosis and dilatation of the stomach.

readily ate a meal of barium carbonate made into pilules with bread crumbs, milk, and sugar. We intended to take the radiograms one hour after the meal, but owing to a breakdown of our plant they had to be taken three and a half hours after the meal. Whilst realising that the work would have been much more satisfactory had we been able to radiograph the animals within an hour of the barium meal, we nevertheless feel that the results justify publication. In several of the radiograms a big air-space was noticed in the upper pole of the cardiac end. Figs. 1 and 2 are radiograms of deficiently fed rats.

The following points we consider of importance: 1. The distension was almost entirely in the cardiac portion of the stomach, and not in the pyloric region. 2. The distension was in an upward direction. 3. Apart from the distension there was marked visceroptosis, and in some of the animals the lower pole of the stomach was at the brim of the pelvis. 4. In some of the rats the distension was so great as to be visible externally.

[1] Rheumatoid Arthritis: Is it a Deficiency Disease? Proc. Roy. Soc. Med., 1927, xx., 41.

Control Animals.

Five rats bred in the same way and originally fed on the same diet were taken as controls. Their diet

FIG. 3. FIG. 4.

Radiogram of control rats fed on normal diet.

consisted of sterilised meat meal, detoxicated embryo of wheat (bemax), barley meal and middlings, with 2 per cent. cod-liver oil and 2 per cent. bone-meal, thus ensuring a sufficient amount of vitamin B, which was lacking in the diet of the deficiency rats. These rats were given a barium meal, and a radiogram was taken three hours later. Figs. 3 and 4 are representative of the control radiograms. It will be seen that owing to the long interval a large amount of barium had left the stomach, but enough remained to give the outline of the stomach itself.

The following points are to be noted: 1. There was no enlargement of the cardiac end. 2. The size of the stomachs of the rats fed on a full vitamin B diet was about one-third of those of the animals fed on a deficient diet. 3. The stomach was in its normal position, there was no visceroptosis, and the lower pole of the stomach was in some cases an inch above the brim of the pelvis.

The control rats were of the same weight as the deficiency rats on the day the radiograms were taken, though younger, having been fed on a good vitamin diet. We made quite certain that the rats were of exactly the same weight, 110 g.

Conclusions.

As the only difference in the diets of the deficiency and the control rats was the presence of vitamin B, it seems that the commonest cause of an atonic condition of the stomach, leading to such marked distension and downward displacement, is the absence of vitamin B from the diet, and in all probability the similar condition seen so often among patients is due to the deficiency of vitamin B in modern diet.

In all our experiments we have found that the detoxicated embryo of cereals has a much more powerful vitamin B content than yeast. The standard for testing our embryo was that 1·0 g. would cure a pigeon suffering from polyneuritis with marked head retraction, and this we found constant. We also tested the embryo on a rat which had been for five weeks on a diet deficient in vitamin B and had developed complete paralysis of the hind legs and convulsions. It was almost miraculous to see how rapidly this rat recovered; within an hour of taking the embryo the convulsions entirely ceased and the rat was able to move its hind legs.

The histological findings will be described by us in a later paper.

Clinical and Laboratory Notes.

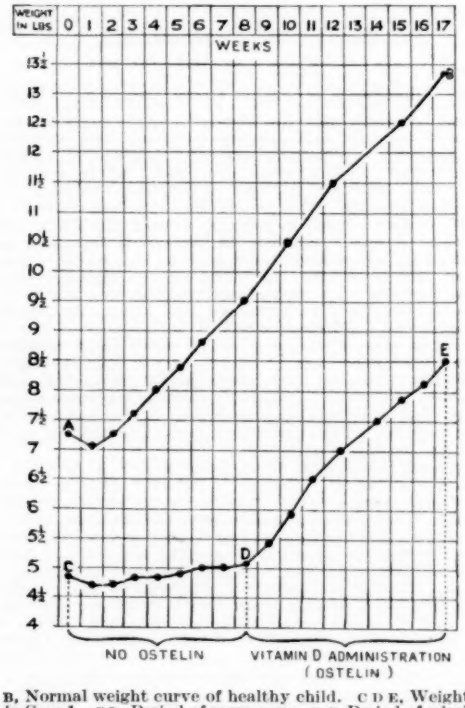
A NOTE ON THE TREATMENT OF PRIMARY OR ESSENTIAL MARASMUS BY OSTELIN.

BY KENNETH MCFADYEAN, M.R.C.S. ENG.

THE term "primary" or "essential" marasmus is applied to passive wasting commencing at birth, or within two weeks of birth, and for which no cause other than a vitamin deficiency has been discovered. The existence of this condition has long been recognised, and Still has suggested that it is due to an inherent error of metabolism. Without careful investigation of a much larger series of cases than the present one, the part of heredity in causation cannot be determined. Still's statement, that he has seen successive children in the same family develop the condition at the same age, should be borne in mind. Every case is remarkable for the striking absence of all symptoms other than passive wasting, which will persist for months without giving rise to further symptoms.

In this series of cases, common causes of secondary marasmus, including lowering of body temperature and rickets, were carefully eliminated. In two cases the absence of rickets in the bones was established by X ray examination. All eight patients have been

FIG. 1.

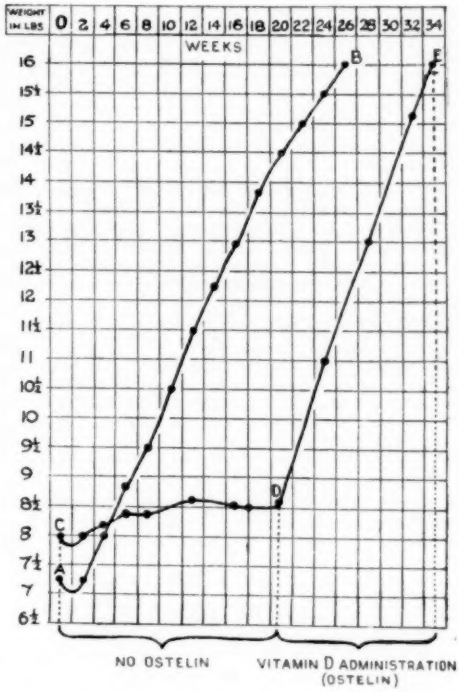


A B, Normal weight curve of healthy child. C D E, Weight curve in Case 1. C D, Period of marasmus. D E, Period of administration of ostelin.

fed on a diet of scalded undiluted cow's milk. The writer's experience, in common with that of many other observers, is that milk thus raised to a temperature of 100° C. for a few minutes is sufficient in vitamin content for most children. Such a degree of heat has no influence on the vitamin A, B, or D content of the milk. Vitamin C is probably almost entirely destroyed, but is apparently of little importance. In essential marasmus the addition of vitamins A, B, or C to the diet fails to produce any benefit. The results of this series of cases suggest that the condition is invariably curable by the administration of vitamin D, but this is no proof that the absence of vitamin D is the sole cause of the condition.

The recent work of Steenbock [1] and of Chick and Roscoe [2] demonstrates the marked relative deficiency

FIG. 2.



A B, Normal weight curve of healthy child. C D E, Weight curve in Case 2. C D, Period of marasmus. D E, Period of administration of ostelin.

of vitamin D in ordinary cow's milk and its complete absence from the milk of cows fed on oil-cake. This deficiency is not increased in the smallest degree by scalding, for vitamin D resists oxidation even when exposed to 100° C. for 12 hours. The fact that vitamin D deficiency appears to be largely responsible for marasmus in young infants and for rickets at a later period accords with some of the recent experiments of Chick and Roscoe.[3] These workers showed that a diet deficient in vitamin D might result in arrest of growth, but that typical rickets is far from being an invariable result.

In all cases vitamin D has been supplied in the form of ostelin, a proprietary preparation of the unsaponifiable fraction of cod-liver oil. An analytical record of the preparation has appeared in THE LANCET (1927, ii., 508).

Two cases are specially interesting as both children were regularly exposed to the sun's rays, and though both pigmented well, neither made any progress until vitamin D was added to the diet. One of these children was living under excellent hygienic conditions in the hands of a trained nurse. The second was in a nursing home for nine weeks from birth under careful and constant supervision.

CASE 1.—The infant was delivered after artificial induction of labour at the end of the thirty-sixth week of pregnancy.

[1] Jour. Biol. Chem., 1922, liii., 21.
[2] Biochem. Jour., 1926, xx., 632.
[3] Ibid., 1926, xx., 137.

The mother, aged 41 years, had severe toxic albuminuria of pregnancy, which terminated fatally.

Birth weight 4 lb. 12 oz. Fed on cow's milk diluted—4 oz. of milk and 8 oz. of water in 24 hours. End of second week: Passive wasting was the only symptom. Weight 4 lb. 10 oz. Citrated whole milk was then given. Third week: No fresh symptoms. Weight 4 lb. 12 oz. Characteristic facies of marasmus. Vitamin C (orange juice) added to each feed. Fifth week: No fresh symptoms. Child strikingly marasmic. Weight 4 lb. 13 oz. Vitamin B (butter and malted carbohydrates) added to each feed. No orange juice. Seventh week: No fresh symptoms. Weight 5 lb. Eighth week: Weight 5 lb. 1½ oz. Vitamin D (ostelin) added to each feed. No orange juice, butter or malted carbohydrates given. The weight then increased as follows. Ninth week: 5 lb. 6½ oz.; tenth week: 5 lb. 13½ oz.; seventeenth week: 8 lb. 8 oz.; thirty-second week: 14 lb.

From first to last no alteration was made in the basic food, method of feeding, or other environmental factor.

CASE 2.—The infant was delivered by normal labour at full term. The mother, aged 23 years, was healthy.

Birth weight 8 lb. Natural feeding. End of second week: No symptoms. Weight 8 lb. Fourth week: Weight 8 lb. 8 oz. Already marasmic in appearance. No other symptoms. Artificial feeding with scalded cow's milk instituted. Sixth week: Weight 8 lb. 6 oz. A little sickness. Milk diluted and vitamin C (orange juice) added. Eighth week: Weight 8 lb. 6 oz. Diet altered to Allenbury's food. Twelfth week: Weight 8 lb. 1 oz. Some sickness. Diet of diluted cow's milk restored. Sixteenth week: Weight 8 lb. 8 oz. Whole milk given. Twentieth week: Weight 8 lb. 8 oz. Vitamin D (ostelin) added to each feed. The weight then increased as follows. Twenty-first week: 9 lb.; twenty-fourth week: 11 lb.; twenty-eighth week: 13 lb.; thirty-second week: 15 lb. 2 oz.; thirty-sixth week: 16 lb. 8 oz.

Both infants were regularly exposed to the direct rays of the sun.

A NOTE ON
SQUINT CURED BY SIGHT EXERCISE.

BY KENNETH R. SMITH, M.D. LOND.,
LATE R.A.F. MEDICAL SERVICE.

THE two following cases of squint came to my notice while acting as medical officer in charge of troops at a barracks military hospital.

H. S., a boy of 15 attached to the band of the —th Dragoons, presented himself at sick parade early in May, 1927, on a question of his glasses. He had marked convergent strabismus, but good sight in each eye separately. He stated that he had been supplied with glasses at the age of 5 for the treatment of the squint, and had undergone two operations for its cure at the Central London Ophthalmic Hospital in 1924 and 1925. This statement was confirmed by reference to the secretary of the hospital.

He was treated by exercise in the following way. A number of ordinary playing cards were placed in three sections on an exerciser stand[1] so constructed that three cards were exposed in a row. The centre card is seen by both eyes, the card on the left by the left eye only, and the card on the right by the right eye only. The group is seen much in the same way as we see out of doors, farther to the left with the left eye, and farther to the right with the right eye, but with both eyes at the same time in all the intervening part. The three cards on the stand form a group of separate tangible things, not simply pictures. No lenses or prisms are used and the two eyes can be seen and their movements observed. The exercising consists in stating the number of cards seen and naming the details of each, then removing a card and again naming details, and so on through the pack. At first the boy saw four cards, the centre one duplicated; after a few days' training he saw three cards occasionally, but the diplopia did not altogether disappear in the first three weeks' training. He then had a rest for a month and recommenced sight training at the end of June. He saw three cards without difficulty in binocular vision, and after a few days he was put to reading exercises, using his glasses.

[1] The exerciser is called the binoscope, and is obtainable from Messrs. John Bell and Croyden.

In the reading exercises the commencement of each line is seen by one eye, the central part of it by both eyes, and the termination by the other eye only. He had no difficulty with the reading exercises.

I last saw him on July 19th; all signs of the squint had disappeared, and he stated that he could see far better than before, and no longer got headaches or tired with reading his music. Inquiry has elicited that his condition was equally satisfactory on Sept. 29th.

While H. S. was carrying out his training exercises, C. F., a boy of 14, with conspicuous convergent squint, presented himself for medical examination as a recruit to join the army. He had normal vision in each eye separately. He was asked whether he played games; his reply was "Yes." Cricket?—"Yes." Which do you do better, batting or bowling?—"Batting, the ball will go to one side bowling." This boy was tried with the exerciser, and the three cards were carefully covered until he was ready to see them, and he was asked, as they were uncovered, "How many cards do you see?" His reply was, "Four—no, three." The diplopia was there, but was immediately replaced by binocular vision. Games had apparently kept this boy's eyes alert and active, so that as soon as he saw with both at the same time central vision with both followed immediately. But playing games had failed to bring about in the course of years what the exerciser enabled him to do at once—that is, *to see with both eyes at the same time.*

His cricket record appears to indicate that one-eyed sight is less efficient when we are ourselves in motion than when we are looking at a moving object.

AN UNUSUAL CASE OF
INVERSION OF THE UTERUS.

BY C. L. LANDER, *D.S.O.*, *M.C.*, M.B. LOND.,
SURGEON, ROYAL ALBERT HOSPITAL.

THE following case seems to be worth reporting.

A primigravida, aged 23, was delivered of a female child on Feb. 27th by Dr. I. E. Harries, of Stoke. The labour was prolonged, and forceps were used. A "battledore" placenta was delivered an hour after the child. There was some post-partum hæmorrhage, and a moderate perineal tear, which was sutured. The puerperium was uneventful and the patient made excellent progress, except that catheterisation was required. On the ninth day the patient was instructed by the midwife in charge to sit out of bed and attempt to micturate spontaneously. Whilst making expulsive efforts in a sitting posture, the uterus suddenly became inverted and presented at the vulva. Dr. Harries was called and the patient was sent to hospital. I saw her a few hours later, when there was no shock or hæmorrhage. A smooth rounded tumour could be felt in the vagina; it was pale in colour. The uterus could not be felt above the pubes. The woman was comparatively unconcerned and thought that there was nothing wrong, as the uterus, which at first protruded from the vulva, had been replaced in the vagina by Dr. Harries.

A general anæsthetic was given, and I attempted to reduce the inversion. Finding it impracticable to do this manually, I used a blunt rounded metal instrument as a repositor. After making steady pressure upwards for some minutes the fundus gave way, and the instrument perforated the uterine wall at the fundus near the left cornu. I then opened the abdomen and was able to effect reduction by inserting a finger through the perforation and exerting steady traction upwards, with the help of an assistant's hand in the vagina making upward pressure. Even so, the reduction was quite difficult and took some time to effect. When completed, the small rent in the uterine wall was sutured and the abdominal wound closed.

The subsequent progress of the case was quite uneventful. At the time of the operation there was nothing apparently abnormal in the size or consistence of the uterus examined from both aspects.

BARNSLEY HOSPITAL EXTENSION.—A new wing of the Beckett Hospital, Barnsley, will be opened on Feb. 8th by the Duke of Northumberland. Towards a £40,000 extension scheme a grant of £13,400 was made by the Miners' Welfare Fund with a suggestion that this money should be used to provide an addition to the hospital which should be directly identified with miners and their families.

Medical Societies.

ROYAL INSTITUTE OF PUBLIC HEALTH.

Lord Justice ATKIN presided at a lecture given at this Institute on Jan. 18th by Mr. ROLAND BURROWS, Recorder of Chichester, entitled

THE MEDICAL PRACTITIONER IN RELATION TO THE ADMINISTRATION OF JUSTICE.

Mr. Burrows said that many medical men undoubtedly felt aggrieved at the way in which they were affected by the processes of law, but it must not be forgotten that the interests of justice were paramount, for it represented the lubrication of civilisation. The problem before the medical practitioner might be essentially different from that before the judge and jury, although the two problems were really one, viewed from entirely different aspects. The doctor was concerned primarily with treatment; the court only with liability. For both purposes it was necessary to ascertain the facts as accurately as possible. A medical man called in to a patient alleged to be suffering from some mental disorder would consider, consciously or unconsciously, first of all whether he was so suffering and then whether he needed treatment, and if so, what the form of that treatment should be. The court would be concerned with the question whether the man was or was not responsible for his actions. The point at which he should undergo treatment occurred at a different stage from that at which he ceased to be responsible. The general public was rather more disturbed about what they believed to be medical views on crime and insanity than the medical profession had realised. One reason was that many medical men held that no insane person should be held criminally responsible. Others again talked in such a way that it was impossible to discover from them whether or not there was such a thing as a sane man in the world. The public were a little alarmed at what would happen in the administration of criminal justice if such views prevailed; it would certainly fall to the ground. The lecturer thought that most medical men held sane views about insanity, but the extreme and startling always caught the public attention.

Functions of the Medical Man in Court.

When a medical man came into court his function was to assist the court to give a correct decision on the facts. In treating a patient it was for him to decide to the best of his ability; he was a seeker after truth and responsibility lay with him. In the court he was an assistant. Many had argued that it was absurd to leave the decision of medical matters to a lay court, but it was the immemorial practice of this country to give an accused person the right to have questions of fact determined by a jury. The medical problem was on precisely the same footing as scores of other problems that arose in all branches of knowledge. Moreover, in the great majority of cases the medical was not the only problem arising, and the decision of the court must be a decision upon the whole of the facts. Whatever be its justification, we were faced with the actual working of the judicial system, whereby the medical man was not entrusted with the duty of deciding any point of medical knowledge. That working was not likely to be altered by any movement or argument; the protection of the public, the judge and the jury, would probably be maintained, at all events so long as present conditions lasted.

In the Supreme Court the power of calling in an assessor was hardly ever exercised except in the Admiralty Division. In county courts the medical assessor appeared in workmen's compensation cases. The assessor was not a judge; he decided nothing, although he was, of course, under the judicial duty of being fair and impartial. The court could, in fact, disregard the opinion of the assessor altogether, and had done so. The assessor was most valuable when the judge was sitting alone or with colleagues, and was very difficult to work when the judge sat with a jury. The jury were the judges of fact, and the assessor's function became that of advising the advisor of the jury. It was doubtful whether he could be of any real assistance; the medical man best assisted the jury from the witness-box. The assessor suffered from the disadvantage of not having been called in to examine the patient at the time. The cause of justice could not possibly dispense with the medical men who came on the scene and observed and prescribed at the time of the event. One principle governed all witnesses, that of telling the truth. The fact that, in practice, a witness was always called by one side or the other did not cast upon him in any way the obligation of being a partisan. All witnesses were called in to assist the court in arriving at the truth. The witness of fact was a man who had observed some fact in issue or relevant to the issue, and his duty was confined to informing the court of the facts which he had so observed. There were strict limits within which he was entitled to inform the court of his inferences and opinions. In actual practice it was impossible to confine a witness strictly to observed facts; even the plainest statement was compounded of what a man had observed and what he had inferred from his observations. An expert, on the other hand, was called because he had special skill and knowledge and could give his opinion on the facts. The significance of an observed fact might only be apparent to men with special knowledge and training.

Evidence of the General Practitioner.

The medical man often occupied a position midway between the witness of fact and the expert. He was frequently sent for at a material time, but the interpretation of the facts which he thus observed called for his special knowledge and training, and he was permitted to give the court the benefit of his opinions. The term "expert" was unfortunate, for it was used in two senses. A medical witness as a witness was necessarily expert, but within the profession there was another and smaller class of experts. The lecturer had often sympathised with the general practitioner called on to give evidence as an expert and expected to be an expert in a particular branch of knowledge where he claimed no such position. Lawyers were apt to pay insufficient attention to the circumstances under which a medical man was called in—cases of emergency where something had to be done at once, where there was no time for detailed examination or precise diagnosis. He might never see the patient again until called to court, and in the more leisurely atmosphere of the law he might be expected to be precise and detailed. Here came in the essential distinction between the problem of the doctor and the problem of the court; for purposes of treatment—the doctor's primary concern—the examination might be comparatively cursory, whereas to give proper evidence, to assist the court, it ought to be more lengthy. A good deal of resentment was caused by the practice of cross-examination, but the other party must, in fairness, have an opportunity of checking the accuracy of the evidence, and there was nothing to differentiate the medical witness from any other expert. It would not advance the cause of justice for him to give his evidence in the form of a report, and to give evidence orally without cross-examination would involve a complete change in the existing procedure. If the doctor were called as a witness by the court, as had been suggested, he would be cross-examined by both parties instead of by one. Moreover, cross-examination was an advantage to a competent and properly prepared witness, enabling him to clarify and expand his evidence and remove misconceptions. The honest witness would come out of the ordeal better than when he went in.

Conflict of Loyalties.

When a medical man was asked to reveal matters confidential between himself and his patient the rule

had been laid down that no medical man could refuse to answer a question. The "privilege" of the lawyer was really a privilege of his client, and essential to the administration of justice. The interest of justice was paramount. If the witness was called by his patient, the patient had to risk disclosures which he did not desire. Civil actions often put the general practitioner in a most difficult position. Anything which tended to prevent people being frank with their doctors was not to the public advantage. Cases must, however, be decided on a general rule, and the general rule always spelt hardship in particular cases. The matter had been extensively discussed; the lecturer's view was that there was no sufficient cause for amending the present rule, relaxation of which might lead to fraud and injustice.

Advice to the Medical Witness.

The doctor unused to giving evidence should remember first of all that his primary duty was to be accurate. He was called upon to assist very materially in the cause of justice, his assistance was regulated by the rules of procedure, applied by persons skilled in the working of them; he could therefore leave the conduct of the case to them. He should make himself acquainted, at least in outline, with the way in which his evidence could assist the court—i.e., with the issue to be tried. Then he should distinguish carefully between evidence of observed fact and inference. Fact easily flowed into inference, inference into opinion, and opinion into mere hypothesis. The experienced witness confined himself, in the first instance, to facts and to inferences which could with certainty be based upon those facts, leaving less certain inferences and opinions to be elicited by the lawyers if they wanted them, or were rash enough to ask for them. A witness was in a strong position when he said "I have observed certain facts; it follows from those facts that such a state of affairs exists," and was prepared to justify his statement both positively and negatively. If he could not draw one positive inference he should say what were the possible ones and then go on to state which, in his opinion, was the right one. If pressed further he should state his opinion definitely, openly, as a matter on which he would profess to give an opinion. He must expect to be challenged by reference to text-books, and should avoid relying more upon what he had read in works of authority than on his own observation and skill.

In conclusion Mr. Burrows urged the formation of a central medico-legal institute where experts could be trained and matters of mutual interest discussed by both professions.

Dogmatism a Disadvantage.

Lord Justice ATKIN said that no class of evidence was viewed more sympathetically by the bench than that of the doctor. An extraordinary number of cases, and an increasing number, seemed to depend upon the true appreciation of medical facts. There was no doubt that the ordinary practitioner was exposed to great difficulty when called upon to give evidence, and he (the speaker) had often sympathised with the medical witness. Although it might seem a paradox, the advocate who had especially prepared his case might be much better equipped than the expert to deal with the matter. The golden rule for the medical witness was to admit uncertainty if he felt it. Nothing could put a doctor in a firmer or more convincing position with the court than his refusal to be absolutely certain about everything. Indeed, if a man wanted to convince a jury it would be worth while saying "I am not quite sure," or "It may be so, but I don't know," once or twice whether he meant it or not! Generally speaking, bench and advocates trusted a doctor as he deserved, and he might face his duty in court with equanimity if he observed that simple rule. As the law stood at present a doctor was not privileged to maintain his patient's confidence. The claims of justice on one side had to be weighed against the claims of public health on the other. His lordship himself was of the opinion that in some cases, notably those connected with venereal disease, the claims of public health far outweighed those of justice. He would be very glad to see some change in the law, even that very limited alteration proposed in Dr. Graham Little's Bill. The courts allowed certain facts to be withheld—for instance, those disclosed to a legal advisor were withheld in the interests of justice, and those which concerned the State were withheld without any reference to the administration of justice. He failed to see why it might not be just as much to the interest of the State to withhold some facts dealing with the health of the individual as to withhold facts relating to armaments. He recognised the extreme public importance of mutual understanding between lawyers and doctors, and familiarity with each other's problems. He would like to see a general system of education in medico-legal matters to which both practitioners and advocates should have recourse. Every person concerned with the administration of justice should be instructed in the principles of medical jurisprudence.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AT a meeting of this Society held on Jan. 18th, at which Dr. JAMES WHEATLEY, the President, occupied the chair, Prof. R. H. A. PLIMMER opened a discussion on

RECENT ADVANCES IN THE KNOWLEDGE OF FOOD.

He described a series of experiments on the vitamin B requirements of birds and animals, with his deductions therefrom. Lists of beri-beri-preventing foods had, he said, been prepared by several workers, but they had not established the quantities of these foods that were required in relation to the B-deficient part of the diet. The experiments he and his colleagues had performed had shown that a pigeon on a staple diet of 30 g. of white rice needed, for the prevention of polyneuritis, the addition of either 3 g. of lentils or egg-yolk, 4 g. of barley, 5 g. of brain, 20 g. of muscle, or 35 g. of milk. The latter two quantities approached the bird's total requirement of foods. The amounts of wheat germ (bemax) or yeast extract (marmite) required were about equal, viz., 3–5 per cent. of the total dried weight of the diet. The figure for dried egg-yolk was 18 per cent. The B-vitamin content of the diet was not absolute, but must be increased with the increase of diet of growing birds; this finding harmonised with the observation often made in the East that beri-beri appeared more readily in persons with a large appetite. Further experiments had shown that a definite relationship existed between the quantity of vitamin B required and the quantity of protein, of fat, or of carbohydrate consumed. The standard diet used consisted of fish meal, white rice, and cod-liver oil, and was thus free of B but sufficient in A and D. Birds did not require C.

On 90 parts of rice, 5 of fish-meal, 1 of cod-liver oil, and 9 of yeast extract, birds could be raised from a day old to maturity. When the fish-meal was raised to 30 parts, six birds out of eight died. Twenty parts, however, were tolerated if the yeast were raised to 16 parts. For the experiments on fat, cotton-seed oil was used to obviate any excess of A and D from cod-liver oil. It was found that the diet had to contain 16 per cent. of dried yeast to keep the birds in health. When the quantity was reduced to 12 per cent. the birds fared very badly. From this Prof. Plimmer inferred that children taking cod-liver oil ought to be given a substance rich in B-vitamin at the same time. The experiments on excess of carbohydrate in the diet had given similar results, and the series had demonstrated that each component of the diet had to be balanced by an adequate quantity of vitamin B. Post mortem the birds that had died from B deficiency, even if they had not shown symptoms of polyneuritis, had revealed signs of intestinal stasis with pale hearts and enlarged livers.

Subsistence Rate of Vitamin B.

The constant ratio shown by the experiments to be necessary between the total amount of food consumed and the amount of food containing vitamin B was, for chickens, one part of dried yeast to 8 or 12 parts of food. Pigeons did well on a ratio varying from 1 in 10 to 1 in 24. Rats could subsist adequately on 1 part in 48. No experimental data were available for man, but calculations based on the beri-beri-producing diets of the Japanese troops during the siege of Port Arthur, and on those of our own men at Gallipoli, suggested a ratio of between 1 : 10 and 1 : 24. For safety the higher figure should be taken. It was not so easy as most people believed to eat a sufficient quantity of vitamin B, as was shown by the work done on standardising foods in terms of their B value. Assuming a staple diet containing no vitamin B at all, the amounts of B-containing foods necessary were: marmite, 10 per cent.; peanuts, 20 per cent.; pulses, 27 per cent.; white barley, almonds, and chestnuts, 40 per cent.; egg-yolk, 50 per cent.; and potato, 80 per cent. Carrots and onions contained a little vitamin B, but green cabbage none. Cocoanut, unlike other nuts, was useless.

Vitamin B and Cell Nuclei.

Prof. Plimmer commented on the fact that young animals needed more vitamin B than did adults, and suggested in explanation that one of the chief functions of this vitamin was to build and repair cell nuclei. All the substances isolated as vitamin B belonged to the group of nucleic acids.

In the absence of Prof. J. C. DRUMMOND, Dr. M. J. ROWLANDS showed a number of slides illustrating the remarkable atrophy and disappearance of areolar tissue and of muscle from the intestinal walls of animals fed on B-deficient diets (see p. 180). He also mentioned work on rheumatoid arthritis read before the Royal Society of Medicine.

Dr. MARGARET EMSLIE pointed out that white flour was much easier and cheaper to use for cooking and baking, and would therefore probably continue in use among poor families. She had been greatly impressed by the value of bemax, at infant welfare centres, for anæmia, languor, constipation, and cardiovascular depression.

The PRESIDENT complained that persons in high positions, both in the Ministry and in the medical profession, had made assertions about food which were entirely unjustifiable. When interference with food, such as fractioning or sterilisation, was in question, the burden of proof ought to lie on the person "committing the offence." McCarrison's work had shown that natural foods generally contained the constituents necessary for life, but that danger arose with the first attempt at fractioning. Many persons said—apparently without any evidence—that it did not matter whether one ate wholemeal or white bread under present conditions, because of the variety of the modern diet. A labourer on 40*s.* a week ate hardly anything but bread, margarine, and a little sugar; for him eggs and other vitamin-B containing foods were out of the question. Moreover, very few of these foods, according to Prof. Plimmer, would do more than balance themselves.

In answer to questions, Dr. ROWLANDS stated that detoxicated embryo of wheat would cure even advanced case of degeneration of the stomach wall, and had been very beneficial in cases of rheumatoid arthritis.—Prof. PLIMMER considered that it was not necessary to balance every meal, so long as the whole day's food was properly balanced. Beer, he said, was so thoroughly filtered nowadays that it contained no vitamin B. The trouble in balancing the carbohydrate part of the diet arose from the sugar, which was highly concentrated, much more than from the white flour. He had never noticed any harm resulting from even an unlimited use of vitamin B.

MEDICAL SOCIETY OF LONDON.

TREATMENT OF PERNICIOUS ANÆMIA.

AT a meeting of this Society held on Jan. 23rd, Mr. HERBERT W. CARSON, the President, in the chair, Prof. F. R. FRASER opened a discussion on the treatment of pernicious anæmia, which, he said, practically meant the Minot-Murphy treatment. Feeding with liver had so altered the outlook of treatment and the prognosis of the disease that it was necessary to readjust one's attitude in regard to it. Last summer Minot and Murphy reported a larger series of cases than those with which they launched their first contribution—i.e., 105 cases—and confirmed the good results of their first set. They were also now able to announce the preparation from liver of a non-protein, non-iron-containing extract, which appeared to have the same action as had whole liver. That shifted ideas from a matter of mere diet to one of specific action. After the treatment not only was there a marked remission of the symptoms in a few days, but also a great change in the blood picture. Minot and Murphy were largely led to try liver for pernicious anæmia because it had many similarities to such diseases as sprue, pellagra, and beri-beri, and liver was beneficial in those, especially in sprue. At St. Bartholomew's Hospital, said Prof. Fraser, 19 cases of pernicious anæmia had been given the liver treatment. Six of those patients, however, were in the remission stage when the treatment was started, and in four others the observations were not complete or other methods of treatment were also used.

After taking half a pound of whole cooked liver, there occurred a marked temporary rise in the reticulocytes. This rise reached its maximum and then fell rapidly, and there followed a steady rise in the red cells and the hæmoglobin until they approached the normal. Coincidently there was a striking improvement in the general condition of the patient, especially, perhaps, in the mental condition. In two cases in which no other diagnosis than pernicious anæmia could be arrived at the treatment failed. One of those patients died, and the post-mortem examination provided no alternative diagnosis. The ten patients who were either in the remission stage when they came under observation or had had other forms of treatment than liver, had now been under observation for three to six months, and the results in them had been good; four had now a red cell count of over 5 million, two of over 4 million, one over 3½ million. One patient could not take the liver satisfactorily, but at the end of five weeks she had over 3 million reds and hæmoglobin 96 per cent.; she could not be observed longer. In one case the treatment had to be stopped because of heart trouble. One patient came under observation while having arsenical treatment, and it was not for some time that liver treatment was commenced. He did very well as judged by the symptoms, but at the end of four months he got acute appendicitis, perforation occurred, followed by peritonitis, and he died. At the time of his second admission with appendicitis four months after liver treatment was begun, the red cells were 5,100,000, the hæmoglobin 95 per cent., and the white cells 13,400.

There was a striking uniformity of immediate results of liver treatment in all the published series of pernicious anæmia, and equally remarkable was the fact that no such action ensued in the case of secondary anæmia. Here, therefore, was a therapeutic principle of which the profession had had no previous knowledge or suggestion. Sufficient time had not yet elapsed to enable judgment to be formed as to the capacity of liver to maintain these patients in the high condition of health to which it had restored them, or to prevent relapses. Minot told him that of 150 cases which had been followed for longer than three years none who had taken the liver treatment in the amounts recommended had relapsed.

Some showed on occasions a small decrease in red cells, but pushing liver at that time resulted in a restoration of the former figure. Studies by Peabody on the bone-marrow in pernicious anæmia showed that in the relapse stage of the condition the marrow was crowded with megaloblasts, which failed to come to maturity. Examination of bone-marrow in the remission stage produced by liver treatment showed the megaloblasts passing on to the megalocyte stage. Hence Peabody suggested that liver acted by imparting a stimulus to the developing red cells, and so enabling them to mature.

It was still uncertain what effect liver had on the nervous system. Though in the cases at St. Bartholomew's Hospital progressive changes had appeared during the liver treatment, it was possible that the approach of the blood to the normal and its maintenance in that state for some time would stay nerve changes. There was no evidence that the achlorhydria disappeared as a result of liver treatment; certainly it was present long before the anæmia became an entity. This fact rendered necessary the general treatment of the patient as heretofore, as a supplement to this new therapy, and especially the administration of hydrochloric acid and the giving of a generous and full diet. Before long, a reliable marketable extract should be on the English market; firms were already making it, and had consented to hold up its issue until the Medical Research Council was able to certify that the product was effective. When simple full liver was given prolonged boiling should be avoided.

Discussion.

Sir WILLIAM WILLCOX agreed that the liver treatment of pernicious anæmia was a great discovery. He commented on the similarities between sprue and pernicious anæmia, the former showing a definite streptococcal toxæmia and sore tongue. He had personally treated several cases of pernicious anæmia on these lines. These patients evinced a striking tolerance to liver, and it was remarkable how quickly the jaundice cleared up, the icterus index falling to normal. The liver treatment seemed also to act as an intestinal corrective, as there did not seem any necessity to resort to colon lavage or aperients, and the offensiveness of the stools was quickly lost. Under liver treatment, not only did leucopenia disappear, but the total leucocytes became normal. As yet no adequate explanation was forthcoming as to why liver acted in this way. He urged that the profession should not cease carrying out the other measures which had been found effective before this discovery was made; certainly the search for septic foci should be continued all over the body. Even now, transfusion might lift a patient over the stile and enable him to react better to the liver treatment. The giving of hydrochloric acid should not be abandoned. He was aware that for many years arsenic had been a kind of sheet-anchor in the treatment of pernicious anæmia, but nervous symptoms were then very apt to occur, and often he had been puzzled to know whether a patient's neuritis was due to the disease or to its treatment by arsenic. It was probable that arsenic and arsenobenzol treatment of pernicious anæmia would now cease.

Dr. HERBERT FRENCH said he was able to confirm what had been said from his own limited experience. In one case during seven weeks the hæmoglobin rose from 35 to 95 per cent., with no other treatment than that of liver by the mouth. This patient preferred it uncooked, and he was able to take it in a sandwich with a little watercress. Other and older treatments, he agreed, should not be forgotten; he remained in favour of transfusion, and thought it should be employed at an early stage, when the return to normal would be found steady and progressive. He preferred to give three transfusions of a pint each at intervals of about three weeks. That should now be supplemented by giving liver. While he had sometimes given arsenical treatment he had not found "606" of much use, and there was little necessity for trying it now.

The PRESIDENT said stress had been laid on the need for attacking cases of pernicious anæmia early, but nothing had been said about the early symptoms, an account of which would be welcome. Thirty-five years ago Dr. Samuel Gee had said one should never make a diagnosis of pernicious anæmia until malignant disease of the stomach had been definitely excluded—a very wise statement in days when biochemistry and X rays were not available as working aids.

Dr. WALTER BROADBENT spoke of two cases of pernicious anæmia under his care which did extraordinarily well with liver treatment plus a good deal of hydrochloric acid to drink.

Dr. R. A. YOUNG spoke of a profound case of the disease which was under his care. The man, aged 44, preferred to take the liver raw, with orange-juice. His return to a normal blood count was more rapid than was the disappearance of the symptoms. There was a striking rise in the eosinophile count. Possibly when liver was taken raw there was a risk of some parasitic infection. He had had a case of pernicious anæmia in which 0·2 g. doses of novarsenobillon produced a dramatic improvement; but as usual the achlorhydria persisted.

Dr. G. W. GOODHART spoke of work done at University College by Miss J. M. Vaughan and himself. He advised against making extract of liver substance on a small scale; it was too expensive in time, labour, and money. Ten cases had been treated under him with the extracts, but in only three had the red count gone up to over 4 million; there was a much quicker response in the hæmoglobin; most of the patients had retained their high colour-index. It was usual to assume that if an extract did not produce good results in 10 to 14 days, it was not good, but he thought a greater latitude should be given, as in one case, which had whole fresh liver treatment for two months without showing response, immense benefit occurred after three months.

Dr. P. B. SPURGIN gave a recipe for liver soup, and directions for preparing and cooking it.

Dr. PARKES WEBER asked whether observations had been made on cases of acute aplastic anæmia fed with liver. The two conditions seemed to him to be of similar nature.

Mr. ZACHARY COPE spoke of a case of secondary anæmia following massive intrathoracic suppuration which did not benefit by blood transfusions, but showed a rapid improvement when fed on fresh liver. He asked whether bone-marrow had a similar effect in pernicious anæmia.

Dr. C. E. LAKIN referred to a case of carcinoma of the stomach which despite the malignant disease showed an increase of red corpuscles after liver feeding.

Dr. BROWNING ALEXANDER thought liver-efficiency tests should be perfected. He felt sure pernicious anæmia was an infection, and the old treatment for it should not be lost sight of.

Sir LEONARD ROGERS drew a parallel between sprue and pernicious anæmia, and related cases in which liver soup produced a dramatic improvement in sprue. In the latter, too, a single transfusion of blood might bring about a cure.

Dr. LANGDON BROWN said that persistence of the achlorhydria in pernicious anæmia, despite the liver treatment, was the experience of most. In one patient of his who was given the treatment the leucopenia still persisted, therefore he could not consider her cured, though her red cell count was 4½ million. Liver treatment had not been successful in human beings suffering from secondary anæmias. He was not inclined to cease giving hydrochloric acid.

Prof. FRASER briefly replied.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTROTHERAPEUTICS.

AT a meeting of this Section, held on Jan. 20th, with Sir HENRY GAUVAIN, the President, in the chair, the subject of

DIATHERMY IN RELATION TO CIRCULATORY DISTURBANCES

was opened by Prof. SIDNEY RUSS with a paper on the physics of diathermy. A few years ago, he said, he carried out some observations on a volunteer, a normal man with a normal temperature to commence with. He was able to pass a current of high frequency through that man, without raising the temperature as much as one degree. The body had a remarkable capacity for dealing with heat introduced into it so that no rise of temperature followed. Diathermy might prove to be an effective method of heating the body in cases of operation, when he believed the temperature of the operating theatre was conditioned by the need to keep up the temperature of the patient. Recently d'Arsonval had brought forward observations on the way in which heat was generated in different liquids by the passage through them of high-frequency currents. He used for this purpose saline, drinking-water, serum, and urine, and having sent a current through them the solution was diluted and the frequency of the oscillations increased, so that the same current resulted. All four fluids gave very similar physical characteristics. The heat developed in these solutions rose more or less on purely physical lines, but by diluting the liquid progressively it tended to lose its electrolytic properties and to become more dielectric. It was important, in the clinical use of diathermy currents, that medical men should have at their disposal a very accurate check on the voltage being employed by them. It was not difficult to so operate these circuits that a large current was sent with a comparatively small voltage, or a smaller current at a high voltage. The heating under those two conditions would be very different. Much of the knowledge as to the behaviour of large high-frequency currents in the body was due to Dr. Cumberbatch. It could not be assumed, however, that a strict parallelism held for strong as compared with weak currents. A chance observation by the speaker led him to believe that nerve-tissue was a very good conductor for weak high-frequency currents; that, however, needed corroboration. On one occasion a weak high-frequency current—i.e., less than 0·2 of an ampére—passed from hand to hand of one of his colleagues for not half a minute. Pins and needles sensations followed, and next morning a large part of the surface of the arm was devoid of sensation. Examination of cutaneous sensation showed an area of anæsthesia on the inner and ventral aspect of the right forearm, and this was bordered by a band of paræsthesia, the whole affected area corresponding with the cutaneous distribution of the ventral fibres of the internal cutaneous nerve. A cervical rib was the cause of the phenomenon.

The Clinical Aspect.

Dr. T. F. COTTON spoke of his experience of the application of diathermy in cases of disturbance of the cardiovascular system. Its value in the latter seemed to depend upon the production of heat in the body; he thought electrotherapeutists generally were agreed that this heat generation and its effect on the deep tissues of the body was the only special effect of diathermy. Lewis and his co-workers had provided a series of accurately recorded observations on the response of the blood-vessels of the skin to heat stimulation, and these studies should help to explain the mechanism of the response of the deep blood-vessels to thermal stimuli. Lewis considered that the reaction by active dilatation of the arterioles, venules, and capillaries to changes of temperature was a dual one. Heat lowered the tone of the walls of the small vessels, and the predominating influence of heat was to increase the concentration of vasodilator substances in the tissue spaces. This reactive hyperæmia with the increased blood flow was a mechanism of fine adjustment which governed the nutrition of the tissues. The metabolites released in the tissues had a histamine-like action, and were normal constituents of the tissues. When constrictor influences predominated, causing an alteration in the peripheral circulation, the release of the vasodilator substances caused the small vessels to dilate, the normal circulation was restored, and there was a better blood-supply to the tissues. There was also a reflex of central origin, which played a rôle in dilating small vessels and so improving the circulation. There occurred such a disturbance of circulation in the condition known as intermittent claudication, and hence diathermy should, theoretically, be a valuable remedial agent in this condition. He had seen the condition improved by diathermy and the pain lessened, but some subjects of it were refractory to the treatment.

Another condition in which constrictor influences predominated was acrocyanosis, but this diathermy only temporarily relieved; probably the constriction was of central origin.

With regard to high blood pressure and its treatment by diathermy, little was really known about blood pressure. But from the point of view of treatment, he thought patients with hypertension could be divided into two main groups: (1) those having symptoms which were directly due to the high blood pressure; (2) those whose symptoms were due to other causes. Patients belonging to the first group were definitely better when the blood pressure had been lowered some 20 mm. of mercury, and some of these had gross and obvious signs of structural disease of the cardiovascular system. Diathermy was of value in lowering the blood pressure. In the second group were patients whose predominant condition was renal disease, with renal insufficiency, and it was not rational to use diathermy for these; lowering of the blood pressure altered the permeability of the kidneys. In the same group were patients with symptoms of myocardial exhaustion due to auricular fibrillation. In these the blood pressure level could be affected by altering the pulse-rate by digitalis, but no good could be wrought by diathermy.

A further important group of patients were subjects of angina pectoris. In these, with high blood pressure, diathermy was a valuable therapeutic agent. Angina he looked upon as a symptom of myocardial exhaustion, frequently associated with coronary changes, but he did not think that the lowering of the blood pressure was the only factor in the improvement; possibly a more important factor was the reactive hyperæmia of the small vessels of the coronary circulation due to the application of heat, the quickening of the pulmonary rate of flow improving the nutrition. Another type of angina was that labelled "secondary angina," in which was no structural disease. Here it was probable there was a nutritional disturbance of the heart function, and the origin of it might be toxic. Patients whose pain prevented them carrying on their usual vocation, but who showed no sign of disease, were helpfully treated by diathermy, though other treatments were also good.

Dr. JUSTINA WILSON reminded members that arterial pressure could be raised either by increasing the power of the myocardium or by heightening the peripheral resistance. Of late years many workers thought that the basal condition was a functional disturbance in the walls of the smaller vessels, and that all the other phenomena were merely signs of enormous strain existing on the cardiovascular system. The primary cause was neither renal nor cardiac; in a large group the condition was due to toxins. The high blood pressure of lead poisoning, of eclamptic conditions, of prostatic enlargement, and of chronic interstitial and glomerular nephritis were well known. While she was working at the National Hospital for Diseases of the Heart it was found that in 40 per cent. of the cases there no toxic cause was

found for the increased blood pressure. The toxins in the other 60 per cent. were those arising from metabolic disease, syphilis, arterial sclerosis, climacteric, and other endocrine conditions.

The modern view on the pathogenesis of the condition under discussion was that it was a disturbance of the balance of the neurovascular mechanism, with some association of tonic and contractile function of the walls of the capillaries; 75 per cent. of the patients were found to have cholesterinæmia. In cases of chronic arterial hypertonia cerebral hæmorrhage frequently occurred. The cholesterinæmia thickened the membranes covering the vessel walls, so preventing their relaxation, and hence they were kept in a state of tonic arterial spasm. That, in turn, led to anæmia and changes in acidity, and to autolysis and necrosis.

There might be no symptoms of this condition for years, then certain effects on the nervous system might become evident, such as morning malaise, motor unrest; and this was later supplanted by great depression. Some patients manifested vertigo quite early, or at least giddiness, concentration and working-power diminished, and there was a condition of vasomotor angina. Renal involvement came later. At a fairly early stage the heart hypertrophied, then dilated, the apex-beat was heaving and displaced, the first sound was short, and the aortic second sound was ringing. Watching cases by means of X rays over a period of years one could see the development of atheromatous changes in the aorta which had not been there before. It could not be said, on her experience, that cerebral hæmorrhage was common in these cases, but 13 per cent. of a large series ended in true cerebral hæmorrhage—some by death, some by complete disablement.

Usually the symptoms came on about middle life. There were often quite long periods of spontaneous remission, which gave a fallacious idea as to results of treatment, as a natural remission of the kind might be attributed to the particular form of treatment being employed. In the third period of the condition the blood pressure was constantly anything from 180 to 210 mm., and later still this might mount up to even 240. Blood pressure curves should be taken four or five times a day, as extraordinary variations were noted at different times in the day.

There was no particular treatment for the first stage of the condition, while in the advanced stages the efforts had to be directed to giving relief. Much could be done to relieve symptoms and prolong life. When the blood pressure was very high, however, very little could be done by physiotherapy. Patients with this condition needed rest in the fresh air and away from their customary environment. Diet was important—i.e., practically vegetarian—fermentative substances and anything which further insulted the overburdened heart by loading the stomach being avoided. Oxygenated baths were found to somewhat lower the blood pressure. In cases of chronic constitutional high blood pressure ultra-violet light had proved, in her hands, disappointing. In many of the conditions she had referred to diathermy was helpful, and it was most useful in intermittent claudication, as it relieved pain so well, though it should be combined with a thorough treatment of the lymphatics. She was a believer in massage for the condition—i.e., a very light superficial stroking of the lymphatics of the skin, with vibratory treatment of the receptaculum chyli. As diathermy produced reactions in many sufferers from angina it was not advisable to give them daily applications of diathermy; sometimes pain and temperature followed the séance.

Dr. AGNES SAVILL spoke, from her own experience, of the benefit obtainable in a tired and exhausted person by the use of a current of high voltage; no hot bath or tonic produced results in any way comparable. She proceeded to give details of two patients on whom she had made many observations over a long course of treatment. One was a man the subject of angina, of heavy build and plethoric appearance, of whose blood pressure she had 59 records. The only relief he experienced from his pain was after a 10- or 12-minute high-frequency treatment on the condenser couch. After these visits the pulse always felt softer and more natural to the examining finger. In the other case, in a man 67 years of age, the story was similar.

Dr. ADOLF SCHOTT (Bad Nauheim) spoke of a case of severe angina pectoris, for whom no treatment, even nitroglycerine, did good. But in a comparatively short time after commencing diathermy the attacks were relieved. In another case of the same kind, however, diathermy did no good; it even started attacks, and only nitroglycerine brought benefit.

Dr. E. P. CUMBERBATCH said that in some experimental work at St. Bartholomew's Hospital it was found that the distribution of the heat applied seemed to be unaffected by changes in the voltage or by the frequency of the oscillation. He expressed his objection to the use of the term "high-frequency treatment of disease," as high-frequency currents were only of use in treatment if they produced heat in the body. The correct term to apply to such treatment was diathermy. The data required to be known were the ampèrage of the current and the temperatures produced. The result in circulatory disturbances was due to the heat generated, and what was important was the acceleration of the circulation through the tissues. One result on the blood of the application of heat was a lowering of its viscosity. Possibly the heating of the skin and the cutaneous nerve-endings produced a reflex vasodilatation of the blood-vessels of the interior. Some cases of intermittent claudication, he agreed, did well under diathermy, but others did not. The cases having hypertension which reacted best to diathermy were those in which renal disease was not present. Still, by applying diathermy to the kidney region specially, so as to promote the flow of blood through the organ, he had derived some success even in those cases.

Dr. G. B. BATTEN thought the idea that the sole effect of diathermy currents on the body was the production of heat was due to the fact that this effect was the easiest to measure. As sensitive instruments came to be devised in the future he thought it would become possible to measure other effects too.

Prof. RUSS and Dr. COTTON briefly replied.

SECTION OF MEDICINE.

AT a meeting of this Section, held on Jan. 24th, the chair was taken by Dr. H. THURSFIELD, Vice-President, and a discussion on

CARDIAC INFARCTION

was opened by Dr. JOHN PARKINSON, who said that it was now realised that this condition was of much more than pathological interest, since many patients might recover. A typical attack occurred in a man of 45 or more who was usually seized, while resting or engaged in normal exertion, with rapidly developing pain in the chest. The pain almost always included the region of the sternum and became intense in a very few minutes, extending into the arms, as often the right as the left, and sometimes into the neck and back. This dull, heavy pain lasted for hours, even up to three days, and its effects were shown by collapse or shock. The patient, although pale, cyanosed, and sweating, perhaps vomiting, might want to move about. The possibility of sudden death was present throughout. The pulse remained regular and might be slowed; the temperature fell during the attack and rose in the succeeding days. The blood pressure was low and might be below 100 systolic. A number of cases had a pericardial rub, but this usually appeared on the third or fourth day, too late to help in diagnosis. A marked leucocytosis succeeded the attack. The complications were sudden death, embolism (10 per cent.), and the ordinary congestive type of heart failure in some degree. It was thus clearly differ-

entiated from angina, which came on during exertion, immobilised the patient, lasted a few minutes only, and in which there was no shock, no dyspnœa, rarely vomiting, no alteration in pulse, temperature, blood pressure, or heart sounds.

As time went on, the speaker hoped, we should be able to establish the diagnosis in less typical and convincing cases. Variants on the type were: the patient who developed a rapidly-increasing series of anginal attacks; the patient who for two or three weeks had repeated and terrible attacks of pain lasting longer than typical angina; and the patient who manifested cardiac failure of the ordinary type with dyspnœa, but without much pain. Arterio-sclerosis was the underlying condition; cardiac infarction was not often related to syphilis nor most common in patients with high blood pressure; 50 per cent. of sufferers had had previous angina. In most there was no thickening of the superficial arteries, but arterio-sclerosis was suggested by a loud aortic second sound when syphilis and high blood pressure had been excluded. The largest artery of the body could now be inspected directly by X ray and the smallest by the ophthalmoscope. In cases of coronary thrombosis the aorta showed radiographically a prominent dense knuckle near the clavicle and a wide shadow. (These appearances were illustrated by slides.) Part of the mystery surrounding angina pectoris had been solved now that it was realised that, in a large proportion of cases, cardiac infarction played an important part as complication or cause. Sufferers from angina might develop it after a cardiac infarct or have a sudden exacerbation due to infarction, and might be better or worse after it. The essence of management was moral support and morphine. Amyl nitrite was valueless and to be avoided. The speaker had an impression that some of his patients had improved under digitalis, but it was important to avoid any abnormal rhythm, such as this drug might originate. Long rest was essential; the condition should be looked upon as an illness comparable to typhoid.

Pathology and Electrocardiographic Diagnosis.

Dr. D. EVAN BEDFORD said that he had collected, from records of the past five years, 83 post-mortem cases of cardiac infarction, usually due to coronary thrombosis. Coronary atheroma underlay 80 per cent., syphilis 10 per cent., and coronary embolism 5 per cent. Syphilitic aortitis occluded the coronary orifices, but never affected the front of the arteries. Embolism was usually a complication of infective endocarditis or intra-auricular thrombosis. There was often gross coronary atheroma when the aorta was healthy, and atheroma undoubtedly had a predilection for the coronary arteries, producing stenosis of their lumen. Thrombosis occurred at this narrow part, or at an ulcer, or else through rupture of the intima and the formation of a small dissecting aneurysm. The left artery was affected twice as often as the right, and the site of election was the first two or three centimetres of the left anterior descending branch. Ninety per cent. of the cases were males; this might be due to some sex difference in cholesterol metabolism, as the feeding of animals on cholesterol produced atheroma. Dr. Bedford showed slides illustrating the area of myocardium involved and the microscopical appearances. The complications were pericarditis, intraventricular thrombosis, rupture of the heart, aneurysm and hæmorrhage into the myocardium and pericardium. Old infarcts were a common pathological finding, showing that many patients survived. Many who died died because they would walk about within a week or two of the infarction; the fall of blood pressure was a natural safeguard against rupture and must be maintained. He had known cases diagnosed as hysteria because the pain lasted too long for ordinary angina. Various cardiovascular conditions might be confused with infarction, and the differential diagnosis from acute abdominal conditions was very difficult. The guiding points were the dyspnœa, the tachycardia, the radiation of pain to arm and jaw, and the history. Dr. Bedford then showed slides illustrating the electrocardiographic changes during and after an attack. In the acute stage there was deviation from the iso-electric level of the segment between the R wave and the T wave; often this went up in lead 1 and down in lead 3. The small ventricular waves were notched or splintered. The deviation of the RT segment was very characteristic. In the healing stage the T wave was inverted either in lead 1 or in lead 3, but not in both. It was usually flattened or inverted in lead 2.

Dr. CAREY COOMBS asked whether the condition was becoming more common, or merely more commonly recognised. Knowledge of it was most valuable in determining the site in many cases of cardiac pain. The distribution of pain in infarction was the same as that of mild angina, suggesting that the latter had its origin in the cardiac wall itself. Eighty per cent. of his cases of infarction fell into a "senile arterio-sclerotic" group, when hyperpiesis and chronic infections such as syphilis had been excluded. Seventy per cent. of his cases of anginal pain came into the same group. On the other hand, this syndrome was absent from cases of cardiac syphilis, and embolism was rare as a cause of infarction. He had frequently found infarction in association with arterial obstruction elsewhere; once with senile gangrene and four times with intermittent limp. Occasionally there was a definite familial incidence. Considering all these facts, he thought it would be agreed that the background of the condition was senile degeneration of the arterial tree, perhaps with special reference to the coronary vessels. He thought infection might act as a precipitating factor. The combination of pericarditis (which occurred in 17 out of his 40 cases), fever, and leucocytosis would be accepted as evidence of infection under any other circumstances. Seven of his cases had suffered from recent acute infections—e.g., pneumonia, facial erysipelas, and bacilluria.

Infarction due to Premature Senility.

Dr. G. HADFIELD said he had repeated Gross's experiments and confirmed his findings by injecting a radio-opaque mass into the heart post mortem. After the fourth decade a very definite change took place in the vascular supply of the heart which, from consisting of straight, fairly large trunks arranged in an orderly system of branches, became crowded with very many minute, closely and irregularly packed vessels, branching very unequally and tending to become tortuous. He showed skiagrams comparing the heart of a man of 75 or 80 years of age with that of a patient after a cardiac infarction, and remarked on the striking similarity. He suggested that in a case of ischæmic necrosis in a man of 55 we were dealing with a heart whose coronary circulation had reached a stage of senility not normally reached until 85. This type of circulation was precarious, especially if associated with a left-sided hypertrophy and in the presence of acute infection, which acted by lowering the blood pressure. Animal experiments had shown that to get the largest area of infarction it was always necessary to lower the blood pressure artificially. Three almost consecutive cases of infarction under his care had had pneumonia, diphtheria with pericarditis, and acute bronchitis respectively.

Dr. J. A. RYLE recorded the outstanding features of the 14 cases that had come to his notice in the last two years, 12 of them during the past 12 months. Age had ranged from 46 to 90; eight had been men and six women. All had been private patients, for, like angina, cardiac infarction was rare in hospital practice. Most of them had been energetic individuals; the series included a doctor, a general, a judge, a hospital sister, a district nurse, and three active business men. Six had had previous anginal attacks and four more previous evidence of cardiovascular disease. Two had been suspected of acute gall-bladder disease, owing to epigastric tenderness under the right rib and a slight subicteric tint which was not uncommon a few days after the attack. Three had vomited; 11 had had pyrexia and five a friction rub.

Equalisation and faintness of the cardiac sounds was an important sign; all had had low blood pressure, except one in whom the reading had gone up from 120 to 190. The pulmonary signs of cardiac failure had been very patchy. Interesting subjective symptoms had been worrying pain over the fourth cervical area, similar to that associated with diaphragmatic pleurisy, and a severe neuralgia in the back of the neck and occiput (four cases) which might be very persistent. Finally Dr. Ryle pointed out that John Hunter's first anginal attack, 20 years before his death, had undoubtedly been one of cardiac infarction.

Dr. B. T. PARSONS-SMITH agreed that signs and symptoms were unmistakable, and might be summed up as a status anginosus with coexisting cardiac and circulatory failure. In one type of case the infectious process matured insidiously and the myocardium accommodated itself; in another cardiac infarction followed acute coronary arteritis. In a third type coronary occlusion was an episode in a process of circulatory inefficiency and aggravated pre-existing symptoms. With these exceptions the cause of infarction was atheroma of the coronary vessels, and the disease ran a relentless course. In most cases belonging to the angina group death depended on the complication of cardiac infarction. Tachycardia served as a menace to the mechanical efficiency of the peripheral circulation and embarrassed the already prejudiced coronary supply. The rhythm might be altered, for instance, premature contractions might occur, or bradycardia or heart-block. Electrocardiographic evidence should be sought early, or important details might be missed. Anastomosis was normally free in the coronary circulation and increased with advancing years, but might perhaps be absent in some cases. On this might depend the prognosis of a case of infarction.

Dr. E. STOLKIND said that the diagnosis was still very difficult and was very important in order to differentiate cardiac infarction from true angina, now that sympathectomy was practised for the latter. He gave an account of an investigation he had made into the subject, and said he had traced 62 cases in the literature up to 1915.

Dr. PARKES WEBER pointed out that in infarction the acute pain might disappear in every part for short intervals; this differentiated it from the pain of any abdominal condition. He thought that Dr. Hadfield's analogy with senility was far-fetched, but the condition was exactly what was found in thromboangeitis obliterans of the legs.

Dr. T. J. HOSKIN agreed that amyl nitrite was detrimental and might produce vomiting. He did not think the electrocardiogram would ever be normal after a cardiac infarction; the area infarcted was bound to show somehow. In addition to rest and morphia, oxygen was useful where there was cardiac failure, and he had had some success with venesection. Most of his cases had been in male Jews.

Dr. T. W. DAVIDSON showed a specimen in which an old infarct had become calcified. It was the heart of a lunatic who had been 25 years in an asylum; he had led an active life and shown no symptoms before suddenly falling dead.

Dr. WEBER urged a search for bone in the calcified wall of the ventricle of this specimen. In his experience the protective calcification always went on to the formation of true bone.

Dr. PARKINSON, in reply to Dr. Carey Coombs's question, said that, if the duration of life were increasing, arteriosclerosis would be increasing, and so cardiac infarction would become more and more important. The patient who had a tachycardia of 100 or more without pain two or three weeks after infarction was one to watch. The tachycardia might be the herald of further complications. He did not agree that, in the present state of knowledge, a normal electrocardiogram could not be found after infarction.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution held on Jan. 14th, Dr. J. C. M. GIVEN, the President, being in the chair, Dr. A. DINGWALL FORDYCE read a paper on the

Detection and Care of Rheumatism in Childhood.

Detection of the frank classical type of acute rheumatism, he said, is simple, but active rheumatism—of danger to the heart—is often present in children with the existence only of symptoms which are not at all striking. The fundamental inclination towards infection is a diathetic peculiarity which may be determined before or after birth, and which may lead ultimately to the exhibition of rheumatic symptoms as a result of endogenous infection by (probably) varying organisms of a similar group. Our main aim must be to prevent the development of such a constitutional tendency as will lead to a favourable field for bacterial infection. During the year 1927, 213 cases of rheumatism were dealt with in the out-patient department and in the wards of the Children's Hospital. One child died of rheumatic heart disease. In 71 cases the heart was permanently damaged without doubt when the child was first seen, and at the end of the year 97 children disclosed permanently damaged hearts. In 31 cases the condition of the heart was doubtful, and in 84 cases there was no cardiac affection. Rheumatic nodules were noticed in three cases. The intelligence quotient, taken during the quiescent or convalescent stage, was usually well above 80, the deficiency being mainly scholastic. The essence of correct care was physical and mental supervision for a prolonged period. For the poorer classes six months in a country hospital with school, such as that at Heswall, proved very valuable, after the initial condition had been dealt with in the city hospital, but to procure effective results a further prolonged period in a residential school was often essential.

Mr. FRANK JEANS read a note on

Statistics with Some Observations.

Certain observations, he said, were more valuable than statistics, e.g., one of Mr. F. J. Paul's, that a woman of 75 was not as old as a man of 75 from the point of view of a major operation. There was a statistical effect on an operator's morality, which showed itself in the rejection or inclusion of certain cases, subconsciously of course, which might affect his mortality. He thought that if an appendicitis was treated medically and the patient died because it was really an internal strangulation, it should figure as a death from appendicitis treated medically; and a death from pneumonia treated by operation in mistake for appendicitis should figure as a death from appendicitis treated surgically, because the patient was, if not statistically, actually dead. One point was of enormous importance. Now that a great deal of surgery was being done by practitioner-surgeons, it must be obvious that pure surgeons were getting an increasingly high percentage of difficult cases, and, therefore, if their mortality was as high as it was 15 years ago, this was no cause for depression. The practitioner-surgeon, who often admitted that he only did the easy cases, was more selective than the pure surgeon was allowed to be; comparison between the two classes of mortality was therefore impossible.

COVENTRY HOSPITAL SATURDAY FUND.—In the past year this fund raised a total of £29,000, which creates a "record," the previous year's figure having been £22,625. Of this total £11,000 was the produce of a carnival. Since the establishment of the fund in 1874 it has raised £256,000.

DUNDEE INFIRMARY.—The trustees of the late Sir James Duncan, of Kinnettles, have made a grant of £30,000 to this hospital. Of this sum, £24,750 is to be expended upon the erection and equipment of a dispensary; the remainder is to be devoted to the endowment of five beds.

Reviews and Notices of Books.

INTERNAL SECRETION.

The Comparative Physiology of Internal Secretion. By LANCELOT T. HOGBEN, M.A. Cantab., D.Sc. Lond., Professor of Zoology in the University of Cape Town. London: Cambridge University Press. 1927. Pp. 148. 10*s.* 6*d.*

THIS third volume of the new series of monographs dealing with comparative physiology, published by the Cambridge University Press, has been compiled by Prof. Hogben, who is an active experimenter, with critical judgment. In this monograph he has obviously been at pains to include only experimental results of proved value. The result is an excellent essay of moderate dimensions, which should be of much use to physiologists. Starting with a chapter on chemical coördination, where the author discusses the precise sense in which he considers the term internal secretion should be employed, he passes on to the question of adrenalin and neuro-muscular coördination. In Chapter III. the relationship of internal secretion to chromatic function is fully dealt with. Prof. Hogben points out that perhaps the most conclusive evidence of internal secretion in the field of comparative physiology is seen in the control of colour response in amphibia. The rôle of the pituitary secretion in influencing the degree of expansion or contraction of the melanophores can be demonstrated by injection and ablation experiments. The pituitary injected frog is a dark adapted frog, whilst, on the other hand, injections of adrenalin induce a contraction of the melanophores. The part played by endocrine factors in regulating secretory processes in the body is described in Chapter IV. This includes a discussion of the regulation of the digestive processes, and also of a hypothesis recently put forward by Dixon and Marshall to account for the phenomena attending the termination of pseudo-pregnancy in the mammal, when, it is suggested, an ovarian-pituitary mechanism comes into play. There are also chapters on the relation of internal secretion to vasomotor regulation and endocrine factors in metabolism, the latter being discussed under three headings: the relation of the thyroid to basal metabolism, the relation of the pancreas to carbohydrate metabolism, and the functional significance of the parathyroid glands. In the last chapter the rôle of the ductless glands in developmental processes is dealt with. There is a very good account of the progress which has been made in relation to thyroid function in this connexion, and also of the experiments carried out to demonstrate the part played by the pituitary in the timing mechanism in amphibian metamorphosis.

RHEUMATISM AND GOUT.

Aspects of Rheumatism and Gout. Their Nature, Prevention, and Control. By LLEWELYN JONES LLEWELLYN, M.B. Lond., Consulting Physician, National Hospital for Rheumatic Diseases, Bath. London: William Heinemann (Medical Books), Ltd. 1927. Pp. 295. 10*s.*

Dr. Llewellyn, in this, his latest contribution to the study of rheumatism and gout, reveals a wide knowledge of the publications of others on the subject, whether these are based on speculation or genuine research. His own theories are in many respects unconventional. His opening chapters deal with diathesis and describe clearly the varying degrees of importance which have been given to it at different times as a factor in ætiology. He then develops the theory of "autonomic-endocrine-imbalance," and throughout the book it is clear that Dr. Llewellyn considers infection of subsidiary importance to glandular deficiencies. In his opinion endocrine disturbance is the cause of the vasomotor instability which Pemberton and his co-workers believe to play a leading rôle in the pathogeny of both atrophic and infective arthritis. One interesting chapter on the pre-rheumatic state in childhood deserves to be widely read. It gives an unmistakable clinical picture which is unfamiliar to many practitioners; if they learn to recognise it as typical, Dr. Llewellyn holds that in many cases disastrous consequences may be avoided. He emphasises the urgent need for preventive treatment, and complains that at present nearly all medical effort is applied to preventing the recurrence rather than the onset of the disease. The chapters dealing with pitfalls in diagnosis are perhaps the best in the book. Here the author is writing from personal and very wide experience as a spa physician, and these pages are full of sage advice.

The period of indiscriminate extraction for supposed dental origin of rheumatic disease is happily passing, but the final chapter on oral sepsis in relation to arthritis contains sound teaching. Even those whose views on rheumatic disease differ widely from those set out by Dr. Llewellyn will gain by studying the fruits of his ripe experience.

EPIDEMIC ENCEPHALITIS (ENCEPHALO-MYELITIS).

By LEO M. CRAFTS, B.L., M.D. Harv., formerly Dean and Professor of Nervous and Mental Diseases, Medical Department of Hamline University, Minneapolis, Minn. Boston: Richard G. Badger. 1927. Illustrated. Pp. 237.

THIS book is mainly a record of cases of epidemic encephalitis which Dr. Crafts has met with in his practice. About half the volume is devoted to case-reports; these would have made more interesting reading if they had been grouped under descriptive headings. Based mainly on these cases the author has written an account of the disease. This may be useful to the American student and general practitioner desirous of obtaining general knowledge on the subject, but it will not convey much new information to the practising neurologist. The proof-reading has been carelessly done. "Naso-phatyngeal" for "naso-pharyngeal," and "Trumbull" for "Turnbull" are illustrative examples; while the sentence on p. 65, "But will soon show the emergence of some of the above making a congerie at once clearing to the diagnosis," seems a departure from the "direct and ordinary English" in which, the author tells us in the preface, it has been his purpose to present his material.

CLINICAL CASE-TAKING.

By GEORGE R. HERRMANN, M.D., Ph.D., Assistant Professor of Medicine, Tulane University, New Orleans. London: Henry Kimpton. 1927. Pp. 90. 6*s.* 6*d.*

THE sudden change from the cold precision of the laboratory to the more haphazard methods of the bedside is often liable to offer opportunities for slackness to the unenterprising or tired student. He finds supervision relaxed, investigation less exact, and the whole field of medicine seems so vast that he succumbs to the temptation to take things easily. To combat this attitude a good guide to case-taking which endeavours to present a "case" with somewhat of the exactness of a scientific experiment is valuable. The business of the clinical clerk is to obtain and set down diagnostic data, and here he will find the necessary methods presented in an intelligible form. First the administrative data, so essential to an institution, then the story of the present illness, working back to the social history and the history of previous complaints, all are set out clearly. The physical examination is next developed in detail, laboratory examinations are indicated, and in the supplement are placed notes on diagnosis, abbreviated histories, abstracts, and progress notes. Dr. Herrmann's book is intended to supplement the "Methods in Medicine," the manual of the medical service of George Dock, and while all allowances are made for the special application of this book to the work at Tulane University, it certainly makes a larger, if not an international, appeal.

MAX VON PETTENKOFER.

His Theory of the Ætiology of Cholera, Typhoid Fever, and other Intestinal Diseases.. By E. E. HUME, M.D. New York: Paul B. Hoeber. 1927. With two portraits and six other plates. Pp. 142. $1.50.

Pettenkofer (1818–1901) got his start in life by being appointed professor of medical chemistry in the University of Munich at a salary of £60 a year with two measures of wheat and seven measures of rye. After a career of the greatest distinction in all branches of hygiene, he shot himself on Feb. 10th, 1901. Dr. Hume deals particularly with his views on the causation of cholera and typhoid fever. Pettenkofer held that the immediate cause of cholera was an *x* which he at once identified with the cholera vibrio when, years later, that was discovered by Koch in 1883. But he would have nothing to do with the idea that cholera could be caught by one person from another. He held that the comma bacillus had become innocuous when it was passed in the stools and could regain its virulence only by developing for a time in foul soil which was neither too wet nor too dry. Hence his famous association between a fall in the ground water and an epidemic, to which his statistical friends attached a probability of 36,000 to 1. Now that hygienists are beginning to think once more that there is something more than the bacillus in an epidemic, the tale may well be read again and pondered over. Dr. Hume tells it pleasantly enough, though some curious mistakes (p. 6 "Marsch," p. 20 "pyroxalic acid," and p. 22 "zinc content of the air") make one a little doubtful whether he is altogether reliable on technical details. There is an ample bibliography of 285 items by and about Pettenkofer.

INTRODUCTION TO PHYSIOLOGICAL CHEMISTRY.

By MEYER BODANSKY, Ph.D., Associate Professor of Physiological Chemistry, University of Texas. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1927. Pp. 440. 20*s*.

IN this book of moderate size Dr. Bodansky undertakes the difficult task of writing for students starting the subject, and also for those who wish to obtain information in specialised branches. On the whole he has succeeded well, and one good point is that this volume is one of the few elementary text-books giving an adequate series of references. The ground covered is very much the same as that of most other text-books on biochemistry. The first chapter or introduction is devoted to a very brief consideration of physical chemistry which could have been considerably extended with great advantage to the elementary reader. A more detailed description of the hydrogen electrode, for example, than that which appears on p. 19, together with a simple diagram would have been of great assistance to the student. The account of Donnan's membrane equilibrium theory is so condensed as to be difficult to follow.

A series of chapters on carbohydrates, fats, and proteins comes next. One novel feature in the section on proteins is a concise account of the views of the late Dr. Jacques Loeb. We believe that this is the first time that his work on the stoichio metric combining powers of proteins with acids, &c., has ever been explained in an elementary text-book. The chapter dealing with enzymes is rather nebulous and does not give any practical methods of estimating the activity of these substances. In the section on hæmoglobin the author has taken great care to incorporate the views of the most recent workers, such as J. Barcroft, M. L. Anson, and A. E. Mirsky, but he has rather neglected the work of the earlier investigators. For instance, some of the more stable derivatives of hæmoglobin, such as hæmatin, are by no means adequately described. An interesting section on physiological oxidations and a series of four chapters dealing with metabolism follow and the rest of the ground is adequately covered.

This volume will be of the greatest value to students of biochemistry, both as an elementary text-book and as a work of reference.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXXI. No. 1. Pp. 1–139. January, 1928.—Histamine and Leucocyte Emigration, by R. T. Grant and J. E. Wood (London). It seems very probable on general grounds that the phenomena of inflammation are caused by some product of injured tissues; histamine is known to cause dilatation of the small blood-vessels and increased permeability of their walls, but, as the authors show, it is not responsible for the emigration of leucocytes.—A Keratitogenous Virus of Pulmonary Origin, by J. R. Perdrau (London). A virus causing keratitis, but not encephalitis, in rabbits is found in a considerable proportion of human pneumonic lungs.—The Histology of Post-vaccinal Encephalitis, by J. R. Perdrau (London).—Variations in the Leucocyte Count upon Single and Repeated Injection of Quartz and of Indian Ink Particles, by A. R. Elvidge (Montreal). Such injections cause a leucopenia, followed by a leucocytosis; a second injection during the leucocytosis does not produce a leucopenia and this reaction is not specific.—Proliferation of Endothelium on the Liver in Experimental Venous Stagnation, by C. Bolton and W. G. Barnard (London). In venous obstruction produced by partial occlusion of the inferior vena cava above the diaphragm the endothelium on the surface of the liver proliferates into buttons, knobs, and polyps without anything which may be called an inflammation.—The Distribution of Tuberculous Lesions in Man and Other Primates with an account of the Lymphatic Glands and Vessels of the Thorax and Upper Abdomen, by H. H. Scott and J. Beattie (London); annotated on p. 198.—The Determination of the Rate of Antibody (Precipitin) Production in Rabbits' Blood by the Method of Optimal Proportions, by H. R. Dean and R. A. Webb (Cambridge). The course of the reaction can be followed well by finding the mixture of antigen and antibody which flocculates most rapidly.—The Cells of Peritoneal Exudates in Guinea-pigs, by L. J. Witts (Cambridge). Working with intravitam and supravital staining the author finds that silver nitrate brings out the cells in the order endothelium, neutrophiles, lymphocytes, eosinophiles, macrophages. These last are of the clasmatocyte type, into which monocytes probably change on leaving the blood stream.—A Modification of McIntosh and Fildes' Anaerobic Jar, by G. S. Wilson (London). An engineers' pattern which costs 12 guineas.—Adenomata of Pancreatic Islet Tissue in the Pylorus and Duodenum, by M. J. Stewart and S. J. Hartfall (Leeds). Heterotopic pancreas is not uncommon, but nodules composed of islet tissue do not seem to have been recorded before.—The Stability of Schick Toxin, by A. T. Glenny, C. G. Pope, and H. Waddington (Beckenham). A borax + boric acid + sodium chloride mixture preserves diluted Schick toxin quite satisfactorily.—A Strain of *B. diphtheriæ* showing Unusual Virulence for Guinea-pigs, by W. Mair (London). A uniquely virulent strain which could not be completely neutralised in vivo with any quantity of antitoxin; death could be prevented, but suppurative lesions still occurred.—Difficulties in the Agglutination of Hæmolytic Streptococci, by F. W. Andrewes (London). Two sorts of colonies must be recognised; the smooth glossy ones give only group agglutination; for specific results the rougher matt colonies must be used.—The Treatment of Relapses in Experimental Trypanosome Infections, by C. H. Browning and R. Gulbransen (Glasgow). After repeated relapses cure may be ultimately obtained with the same trypanocidal drug and without increasing the dose.—Obituary notices of J. W. Dawson and Adrian Stokes.—Proceedings of the Society.—Books received.

THE LANCET.

LONDON: SATURDAY, JANUARY 28, 1928.

THE DIETETIC VALUE OF MILK AND MILK PRODUCTS.

THE exceptionally high dietetic value of milk for the human dietary has been emphasised lately by the work of Dr. CORRY MANN and of Dr. W. CRAMER. The preliminary report by Dr. J. B. ORR on a large scale test carried out on school-children in seven cities and towns in Scotland and in Belfast, which we publish in this number, adds further confirmatory evidence. There is nothing surprising or revolutionary in the idea that milk is a most useful food for the growing child. The vitamin content is not, of course, the only factor that confers upon milk and milk products their dietetic value, which was recognised before the discovery of vitamins; and our new knowledge of the existence of these food accessory factors has justified a common belief. The earlier writers on dietetics, however, thought merely in terms of quantity. An adequate diet in their view was one which provided for an adequate intake of protein and of total calories. The study of the chemistry of proteins which revealed these substances as being built up of amino-acids has made it clear that all proteins are not dietetically equivalent. Broadly speaking, the body requires for its well-being to be supplied in the food with all the amino-acids of which its cells are built up; a protein which contains all these amino-acids is therefore of a higher dietetic value than one in which some essential amino-acids are missing. Gelatin is an example of a protein of very low dietetic value, since many essential amino-acids are missing in its make-up; it is therefore impossible to live on a diet in which the protein is supplied entirely in the form of gelatin, and such a diet has to be supplemented by the addition of proteins of a very high dietetic value. The proteins of milk—casein and lactalbumin—or of meat are examples of proteins of a high dietetic value, since they contain all the essential amino-acids. In an intermediate position are the proteins of bread which are completely deficient in only one essential amino-acid (lysin) and partially deficient in another (tryptophane). The mineral constituents are another important factor in the consideration of a diet, especially where the growing organism is concerned. The growing child has a special requirement for calcium and phosphates for the building up of bone. Recent work in rickets has shown that these inorganic elements must be supplied in the diet not only in adequate amounts but also in definite proportions. Most articles of food are poor in calcium; milk is especially rich in calcium and contains calcium and phosphates in the proper proportion. A pint of cow's milk contains one gramme of calcium, more, in fact, than is contained in a pint of lime-water. VOIT has calculated the calcium requirement of the growing child as one-third of a gramme per day; such a requirement would be covered by the consumption of 7 oz. of cow's milk. If it had to be covered by the consumption of bread or of eggs it would require 1000 grammes of bread or 15 eggs. Such a diet is unsuitable for bone growth because, apart from any other consideration, it furnishes the required calcium with a large excess of phosphates, which would be harmful. Milk is also relatively rich in vitamin A, which is associated with the fat and is therefore absent, or greatly diminished in amount, in separated milk. It also contains a considerable amount of vitamin B. It does not contain vitamin C.

If we compare the dietetic value of milk with that of another staple article of diet—bread—we find that, as already stated, the proteins of bread are not of the same high dietetic value as those of milk. Moreover, bread is poor in calcium and contains this element with a large excess of phosphates, while so far as vitamins are concerned, white bread contains neither A, C, nor, as appears now to be generally agreed, B. The dietetic value of bread lies in the fact that it presents the bulk of the chemical energy required in a form which is cheap, palatable, and not readily perishable. We may say that bread stands for quantity, milk stands for quality. What is true for milk applies also to its products, cheese and butter. Cheese contains the protein casein, of a high dietetic value, in a very concentrated form, together with a certain amount of vitamin B. Butter is rich in vitamin A. Both contain less calcium than milk but are still richer in calcium than most other articles of diet. As the calcium requirements for growth become less urgent so the diet changes from milk to cheese and butter. It is now readily seen why milk and its products are of such high dietetic value. Their addition to a diet corrects most dietetic deficiencies except a deficiency of vitamin C which can be supplied by fresh fruit and vegetables. A diet therefore which is built around a basis of bread or cereals and milk or its products is economically and dietetically sound. The point has been very neatly put by no less an authority than GRAHAM LUSK who, in deploring the general ignorance concerning the elementary facts of dietetics says: "Few of those who eat in restaurants realise that the greater quota of nourishment which is brought to them lies not in the specific dish served but in the bread and butter which is ostensibly presented as a gift." That cereals and milk or its products represent the basis of our diet has, of course, been the experience of mankind, and if, to-day, the question of a sound dietary has become a problem for serious consideration, it is because the consumption of milk and its products has fallen into disuse, partly for economic reasons, partly through ignorance, and partly as the result of the teaching of faddists who take a one-sided view of dietetic problems. The remarkable improvements obtained in children both by Dr. CORRY MANN and by Dr. ORR by the addition of milk to their diet, is evidence not only of the high dietetic value of milk but also of the inadequacy of the diet on which the children had been kept. From this point of view the investigation of Dr. ORR is of special value because it applies to children who live in their homes. The result is a striking commentary on the glib statement which one hears and reads so frequently that on the whole the dietary of the people in this country is adequate.

It is also clear from these considerations that even separated milk is of high dietetic value especially to growing children if the child is kept on an inadequate diet. For the addition of separated milk will compensate for an inadequate supply of calcium, for a deficiency of vitamin B, and for the presence of proteins

of low dietetic value in the basal diet. But it would be a serious mistake to argue that separated milk is as good as full milk, unless butter happens to be given in the diet. There is abundant evidence in the literature, beginning with the well-known paper by Dr. C. E. BLOCH, of Copenhagen,[1] to show that the absence of milk-fat in the diet leads to serious impairments of health—not only in children but also in adults. There is also the evidence of Dr. CORRY MANN'S investigation, where the group of children receiving butter did nearly as well as the group receiving full milk. If this difference has not yet appeared in Dr. ORR'S investigation it is due to the fact that the ill-effects resulting from a deficiency of milk-fat take a much longer time to appear and that they are not so readily reflected in the height and weight of the children, which form, after all, a superficial criterion of the general state. It is known from experiments that animals can grow to their natural size on a diet deficient in vitamin A, but are nevertheless inferior to a normal healthy animal in their general vigour and in their greater susceptibility to infections, especially of the respiratory tract. H. C. SHERMAN has, in fact, recorded this effect in an experiment in which separated milk was used.[2] The further reports of Dr. ORR'S investigation, which is being carried out under the authority of the Scottish Board of Health, will be awaited with the keenest interest. The importance of this investigation as well as that of Dr. CORRY MANN cannot be overestimated. The Medical Research Council, which was responsible for Dr. CORRY MANN'S study, and the Scottish Board of Health have rendered an important service to the community in having supported work which could not have been initiated satisfactorily by a private individual; we should like to see a more extended investigation covering the whole period of childhood and carried out in institutions. Sir GEORGE NEWMAN, in his recent report On the State of the Public Health, writes: "When it is realised that little more than a quarter of a pint is the average daily consumption of milk in this country at the present time, some conception can be formed of the inadequacy of the amount of this most valuable food which its children are receiving, and of the improvement in their growth and vigour which might certainly be secured by an adequate increase in its consumption. . . ." Dr. CRAMER, in drawing the same conclusion, has shown that not only the consumption but also the supply of milk is inadequate. The dairying industry complains that, under the present conditions of an inadequate demand, it cannot dispose of all the milk it produces, and that for its salvation as an industry it requires an increased demand. Is this really a problem the solution of which surpasses the wit of man?

NOMENCLATURE.

HUMAN thought is always a little in advance of human language, and since Adam's time man has continually been engaged on finding names for things as he slowly disentangled them from one another. And with that innate passion for security and certainty which he has had for at least as long, man has gone on defining and naming in the glorious hope that finality is to be found with the other ingredients of the golden age just round the next corner. Such a faith is altogether admirable in that it makes for clear thinking and clear writing in the descriptions of our discoveries. But in its eschatological form it is, of course, wholly illusory; a complete and immutable system of names and definitions presupposes a state of completion of human knowledge which means an end of progress so repugnant that no lively mind can contemplate its possibility.

Nomenclature then is not a question of absolute truth. Some people think it is; they take it too seriously and fall into the trap of giving definitive names, true to-day, false to-morrow. But it is a matter of practical importance, and no doubt, as Dr. E. WARD suggested in our columns last week, most doctors do not take it nearly seriously enough. In medicine obscurities and difficulties of names and definitions seem to arise, roughly speaking, in three ways—from realising that two things which were thought to be the same are really different, from finding that apparently dissimilar things are really alike, and from general ignorance of the nature of the thing. The old controversy about the cause of "sunstroke" was solved by the discovery that excess of actinic rays causes "sunstroke" and a hot moist atmosphere causes "heatstroke"; "sunstroke" is still used as including heatstroke, and there is a real gain in giving up the term and talking of "insolation" instead. Similarly the difficulties about "shock" have largely disappeared since it was realised that immediate shock, of the nature of a severe faint and due to overstimulation of the central nervous system, is quite different from secondary shock, mainly an anhydræmia and caused by the absorption of histamine-like bodies from injured tissue. Examples of misleading differentiation are mostly pathological, and it is perhaps mainly from the point of view of the elementary student of general pathology that it is confusing to call what is essentially the same thing "pus" "caseous material" and "gummatous stuff" under different circumstances, or to speak of an "infarct" in the spleen and "softening" in the brain. The discovery of the tubercle bacillus revealed an underlying similarity in a great diversity.

It is to examples of these two classes of confusion that, we believe, it would not be difficult to apply effective and useful consideration, possibly by such deliberate means as an ad hoc committee. But it is another matter to deal in the same way with confused mobs like "rheumatism" or "eczema" in which only a few small groups have shown any signs of standing together on a basis of substantial identity. The useful definition of a disease may be ætiological—e.g., typhoid fever—or anatomical—e.g., cirrhosis of liver—or purely symptomatic—e.g., epilepsy: all such criteria are, in the final sense, provisional, but they do very well in practice. But when nothing is known about the cause, little about the morbid anatomy and the symptoms are various, it is difficult to see how much progress can be made with names and definitions. Yet the attempt is, we believe, worth making; if anyone is going to define "constipation" he will have to acquaint himself first with all that is known or suspected about it, and he would be a fuller man even if, as is likely, the profession declined to adopt the definition he finally reached. And an inquiry into the meaning of "rheumatism" will in one way or another repay all the work which can be put into it. But it would be unwise to expect too much from such a committee as Dr. WARD proposed in our correspondence columns; arbitrary definitions based on grossly inadequate knowledge would be worse than useless and names can be invented usefully only when there is something definite to identify. Patient inquiry will solve many of the present puzzles. There is a famous picture of Adam standing affectionately

[1] Journal of Hygiene, 1921, xix., 283.
[2] Sherman and Smith: The Vitamins, 1922, p. 197.

among the horse, cow, cat, and dog, and so on, for which he had easily found names, and looking a little doubtfully at an unfamiliar crowd of elephants and crocodiles and the like waiting for their titles; they got them in the end.

A NEW CHAIR OF PUBLIC HEALTH.

THE establishment by the University of London of a chair of public health, tenable at the London School of Hygiene and Tropical Medicine, is both generally an excellent departure and in special relation to the School is of real import. Only recently we had to chronicle at the School the institution of new departments of bacteriology and immunology under Prof. W. W. C. TOPLEY, and of epidemiology and vital statistics under Prof. M. GREENWOOD. When these things are recalled in connexion with the facilities for clinical and pathological study offered by the Seamen's Hospital Society we see that the students of the School have open before them opportunities which it would be difficult to over-estimate for carrying on the development of public health work in this country and overseas. Thus it is of prime importance to secure the right man for the chair. The governing body of the School have adopted a provisional scheme to come into force upon the new appointment, under which the broad practice of preventive medicine, the appropriate technique of sanitation, and the principles of official administration will receive parallel attention, so that the control of disease, both infectious and non-infectious, can be exemplified by practical measures, by scientific hygiene, and by much needed instruction in the way to secure full coöperation between health authorities and medical practitioners.

The applications of candidates for the new chair must be received by the Academic Registrar, University of London, South Kensington, S.W. 7, not later than the first post on Feb. 16th, a date that is near at hand; and it is understood that the selected man, though his appointment may not take effect until the beginning of 1929, will be asked immediately to take a seat on the School Council, and to assist in the organisation and equipment of his own special work. While the general supervision of the Director of the School, Dr. ANDREW BALFOUR, will remain, and while matters of broad policy and finance will be outside the professorial duties, the man appointed will bear a heavy responsibility which is not directly represented in a salary of £1500 per annum—in saying which we do not forget certain compensations which he will obtain. The work is of the highest importance both practical and academic, and the professor will have unequalled opportunities for public service, for the scope of his influence will be Imperial, and, indeed, international.

INTERNATIONAL CONGRESS OF OTO-LARYNGOLOGY. As we have already announced, this congress is to be held at Copenhagen from July 30th to August 1st. Among the subjects to be considered is the Anatomical Structure of the Ear and its Influence on the Course of Suppuration of the Middle Ear, on which a discussion will be introduced by Prof. Georges Portmann (Bordeaux) and Prof. J. Mouret (Montpellier). Messrs. Bennett, 66, Haymarket, London, S.W. 1, have been appointed by the Danish Committee to arrange excursions, and will shortly send out particulars to all who have joined the British Committee. The hon. secretaries of this committee are Mr. J. S. Fraser (Edinburgh), and Mr. F. W. Watkyn-Thomas and Mr. Lionel Colledge (London), to whom inquiries should be addressed. Dr. G. V. T. Borries, 10, Christian IX.'s Gade, Copenhagen K., is in charge of the arrangements for the anatomo-pathological museum and Dr. F. Norsk, 3, Nytorv, Copenhagen K., is arranging an exhibition of instruments. They invite contributions and applications should be made as soon as possible.

Annotations.

"Ne quid nimis."

OUR PRISON POPULATION.

THE Prison Commissioners' Report in former years has contained an Appendix of extracts from the annual reports of Governors, Chaplains, and Medical Officers. The extracts were frequently illuminating, and it is a pity that the Commissioners' Report for 1926, just issued,[1] omits it. There is, however, as usual, plenty of interest in the Medical Commissioner's contribution to the Report. The old difficulty of dealing with mentally defective prisoners under the Act of 1913, which arose from the statutory insistence upon knowledge of the defective's early history, has been partially removed by the amending Act passed at the end of last year. But it is clear that, although the administration of our insanity and mental deficiency statutes enables us to eliminate from the prison population large numbers of persons unsuitable for prison discipline, there is still much to be done. There remains a residue of non-certifiable cases which medical opinion must regard as improperly placed in a prison environment. This subnormal group includes the simple feeble-minded and the border-line prisoner "whose offences are due to their low intelligence and high suggestibility and who are relatively incapable of social rehabilitation on account of their low mentality." The group is defined to include mental defectives of congenital origin with or without epilepsy, persons in an imperfectly developed state of insanity, those who are senile or mentally weak after an attack of insanity, the weak-minded whose condition is due to alcoholic excess, and those whose condition cannot be attributed to any definite cause. Arrangements have been made for reporting these cases and, if the term of detention is a month or more, transferring them to special prisons where they can be segregated and suitably employed under modified discipline. It is, of course, unfortunate that their detention cannot be continued beyond the term of their sentence, but, on their discharge from prison, they are brought to the notice of the local agent for the Central Association of Mental Welfare. If the nation had regard to the economy and the mental improvement which might follow if a more permanent segregation could be authorised by Parliament, it is hard to believe that the law would not be speedily changed. These are cases which are unemployable in the conditions of life outside an institution, though there is a capacity for some simple manual employment under supervision. The Medical Commissioner gives particulars of 77 men and 29 women of this type. The commonest offence among the men was theft or receiving; amongst the women it was drunk and disorderly behaviour; the other offences vary greatly in gravity. One of the men had 54 previous convictions; one of the women had 109.

Two years ago (in the Report for 1924) the Medical Commissioner referred to the treatment of prisoners' teeth. He mentions this point again now in connexion with inmates of Borstal institutions; he is able to record that special arrangements have been made not only for the care of teeth but also for the correction of errors of vision and the cure of deformities or other conditions which prevent the Borstal boy or girl from receiving full benefit from training and which hamper their prospects of employment afterwards. There were five suicides in local prisons in England in 1926; this is not serious in view of the marked increase in suicide recorded in the criminal statistics for 1925 as occurring since the later stages of the war. Perhaps the most important topic in the Medical Commissioner's observations is the prevalence and effect of encephalitis lethargica. The disease has been studied over the two-year period from April, 1925, to the end of

[1] Cmd. 3003. H.M. Stationery Office. 9d.

March, 1927. No case of its onset in any prison or Borstal institution occurred, but 72 cases (65 males and 7 females) were noted amongst remand and convicted prisoners. Half of these cases were classified as "definite," the disease being established either from known early history or from typical subsequent condition. The remaining cases were classified (in almost equal proportion) as "probable"—i.e., where the history is indefinite but the mental and physical condition leave little room for doubt—and "suspected" where the existence of the disease is distinctly suggested. In only 53 out of the 72 cases did the attack of encephalitis occur before the age of 18; thus only two-thirds would have come within the new definition of "mental defectiveness" in Section 1, Subs. (2) of the 1913 Act as recently substituted by the amending Act of 1927. In 54 out of the 72 cases imprisonment either had no harmful effect or actually produced an improvement; the residue included one person insane on admission, another reported to the court as insane and cases which either deteriorated or got no benefit from prison life. The Medical Commissioner is careful to point out that, while the disease is serious and can at times have serious sequelæ, the after-effects are of all degrees of intensity; it cannot, he thinks, be logically contended that a person who has had encephalitis is thereafter necessarily immune from the consequences of his criminal acts.

THE WELLCOME RESEARCH LABORATORIES, KHARTOUM.

As soon as Lord Kitchener had reconquered the Sudan in 1898 he established the Gordon College as a boarding-school where secondary education could be given to picked native boys and other boys of African and Eastern race to equip them to take part in the political administration and the education of the country. Inevitably the College became the headquarters of education all through the Sudan, and gathered under its roof, besides its own departments, a number of kindred and indispensable organisations of which the best known to our readers is the Wellcome Tropical Research Laboratories. The year 1926, according to Major R. G. Archibald's report, incorporated in the Report and Accounts of the Gordon Memorial College Fund for that year, was the busiest since the foundation of the laboratories, as closer coöperation with the Government enabled a greater number of examinations to be carried out. The bacteriological section is to be removed shortly to new buildings near the Civil Hospital and the new Kitchener School of Medicine, where its usefulness will be still further extended. Among its activities in the year under review were 7510 routine examinations. One day in the week is set aside for syphilis tests, of which Kahn's precipitation test is still the most popular. An epidemic of enteric fever in the neighbouring city of Omdurman threw much extra work on the staff, who, in addition to examining a quantity of material, manufactured prophylactic and therapeutic vaccines on a large scale. Doses of cholera vaccine sufficient for 12,000 individuals were prepared for the protection of Sudanese Muslims making the pilgrimage to the Hejaz, all of whom are now inoculated. A serious outbreak of rabies in the southern provinces necessitated the preparation of 2000 doses of antirabic vaccine; the virus was sent down from the Antirabic Institute in Cairo and maintained by passage through rabbits. Work has been done on the investigation of the sources of well pollution throughout the country, a most important activity in a land where wells are the only supply for the bulk of the population. Another piece of research is that directed against bilharzia, and in this the staff are assisted by a brigade of intelligent natives who have been trained to locate and destroy the mollusc which acts as the intermediate host. The examination of several hundred cultures of soil bacteria has established that black arm disease of the cotton plant does not originate in the soil. The training of native laboratory assistants for hospitals in outstations is one of the latest additions to the activities of the centre. As well as carrying out their arduous duties, the staff have contributed six papers between them to various scientific journals.

The chemical section has for the last few years been chiefly engaged in soil and fertiliser investigations, in connexion with the rapid cotton-growing developments on the Blue Nile. Other questions that have been referred to the section from time to time have been the Government contracts for sugar and petrol, the analysis of alcoholic liquors at the high local temperature, and the standardisation of the liquid rotl (pound). The Atbara laboratory busies itself with railway problems, such as the examination of water and fuel, the cause of priming in boilers, the prevention of scale, and the proofing of rolling-stock against fire. The staff of the section found time to publish four papers during 1926.

The entomological section have no lack of pests on which to make war, and some of their enemies at present are cotton-destroying termites, thrips, bollworm, and locust. The interesting fact has been established that the gregarious locust so destructive to crops is evolved by suitable climatic conditions from the solitary and sedentary *Schistocerca flaviventris*, and this discovery should prove of considerable economic importance. The Director recommends arsenite of soda as a preservative of timber against white ants. In addition to these sections, geological and antiquities sections flourish, and there is a natural history museum. Sub-laboratories have been established for some time at Atbara and in the rich irrigated belt of the Gezira. The future of the Sudan, which promises to be so prosperous and so important for the cotton industry of this country, will probably owe as much to the energy and initiative of this scientific foundation as it will to any department of the Government, which is fortunate to have the coöperation of so admirable a service.

THE APPARENT INCREASE OF CANCER.

WHATEVER may be its explanation, there has been an apparent increase of cancer during the last decade or two, and the general public is beginning to take alarm about it. In another column Dr. D. F. Shearer marshals his figures to show that the reported increase of death is only apparent, and that when proper allowance has been made for the effect of better diagnosis and more accurate certification there is nothing left which cannot be explained by a change in the age-distribution of the population. It is open to anyone to check his calculations, for his figures are taken from the annual reports of the Registrar-General, although he does not appear to be familiar with Dr. T. H. C. Stevenson's analysis in the 1924 report. Individual study of these figures is, of course, very laborious, and Dr. Shearer has limited himself to a comparison between two isolated years 1913 and 1925; very probably he would be the first to admit that a better idea of the general trend of the death-rate would be given by taking a continuous series of years, or by comparing two periods of five years or more, especially in the case of relatively uncommon sites. This has been done by Dr. Stevenson first for the series of years 1897–1917 (R.-G.'s annual report for 1917) and more recently (R.-G.'s statistical review for 1924) for the two decades 1901–10 and 1911–20; with these are compared the single year 1924, which is only one year less recent than the year chosen by Dr. Shearer, and the general result of taking 1924 and 1925 is the same. Dr. Shearer seems to think that Dr. Stevenson's conclusions were based for the most part on crude death-rates, but although two tables in the latter's earlier analysis did employ crude death-rates at sites (for reasons explained) his general conclusions were confirmed by standardised values; and in the later report all the tables are based either on standardised rates or on rates at age-groups. When Dr. Shearer writes "the error that may arise from the use of

crude rates is well shown in the case of the tongue in the male. Using crude rates, cancer of the tongue rose between 1913 and 1925 from 56 to 63 per million living, standardisation shows that in fact cancer of the tongue had fallen from 70 to 63 per million living "—he is doing Dr. Stevenson an injustice, for in his 1924 report (Table XXXIX., p. 58) the latter gives the following standardised death-rates per million at all ages for cancer of the tongue—

1901–10.	*1911–20.*	*1924.*
43	51	48

which show the recent tendency to decrease that Dr. Shearer points out. The absolute differences in the rates quoted by Dr. Stevenson and Dr. Shearer are due to different standard age-distributions adopted in standardisation, but this does not affect the agreement in the general trend. With regard to Dr. Stevenson's grouping of the sites into "accessible" and "inaccessible" Dr. Shearer calls this a distinction "of opinion and not of statistical fact." The classification was based on reports of 52,420 cancer deaths in the U.S.A. in 1914, the practitioners being asked in each case if the diagnosis were certain or uncertain, and the classification was determined by the proportion of uncertain diagnoses in each site. In the accessible group the highest proportion of uncertain diagnoses was 0·6 per cent., while for inaccessible they ranged from 15·3 per cent. to 72 per cent. As the whole point of the division was facility of diagnosis, the method appears to us statistically sound. In any case each site is a separate question, and a true decrease in females of cancer of the uterus cannot be set against an apparent increase in males in some other site. While probably there is no disputing the fact that a large part of the increase in cancer deaths is due partly to change in age composition of the population and partly to better diagnosis, it is questionable whether this accounts for all the increase or only part of it. The effect of age can be estimated statistically by taking rates at ages or by standardisation, but the effect of change of diagnosis can only be tested indirectly and must to some extent be a matter of opinion.

THE DENTISTS REGISTER AND THE NON-PAYMENT OF RETENTION FEES.

THE dental profession has suffered much from the uncertain expression of Acts of Parliament. First of all in 1910 there was trouble over Section 3 of the Dentists Act of 1878, the House of Lords interpreting the words "specially qualified to practise dentistry" in such a way that it was necessary to pass the Act of 1921 in order to overrule the decision in Bellerby *v.* Heyworth. Then in 1924 the case of Binns *v.* The Dental Board showed that the words "served during the late war" in the 1923 Act were capable of a far wider construction than had been supposed. And now it has been necessary to bring a test action in the Court of Chancery to obtain judicial confirmation of the fact that the Acts and Regulations authorise the Dental Board to remove a dentist's name from the register if he has failed to pay his annual retention fee. To uninstructed minds the matter may have appeared simple, but it was stated in court that the Law Officers in England took one view and the Lord Advocate in Scotland took the other; the Dental Board was therefore obliged to go to the law-courts for a definite ruling. The Act of 1921 says that the Board may make regulations about a variety of matters, including "prescribing the fee, not exceeding £5, to be charged in respect of the retention on the register of any person registered after the commencement of this Act in any year subsequent to the year in which that person was first registered." Regulations were accordingly made providing that the annual retention fee should be paid before Dec. 31st, and that in default of payment the registrar should forthwith remove the name from the register. If the Act had merely said that the Board might charge fees and might recover them in the law-courts, it might not have been clear whether the non-payment of a retention fee would justify removal of a name from the register, or would merely give a right of action against the defaulter. But when the Act speaks of a fee "to be charged in respect of the retention on the register of any person registered" it seems obvious to the lay mind that non-payment of fee involves non-retention of name. This is the view which Mr. Justice Astbury took. It had been stated on the other side that the Act of 1878 made a fee payable on registration only and contained no power to remove a name for non-payment of fees. The Acts of 1878 and 1921, it was argued, had to be read together, and there was nothing in the 1921 Act which expressly authorised the strong step of removal from the register—excluding a practitioner from his livelihood—for non-payment of fees. If the authority to remove the name for non-payment were to be found only in the Regulations made under the Acts and not in the Acts themselves, then (the argument continued) the Regulations must be ultra vires. This ingenious argument, however, did not succeed. The Astbury judgment decides that the Regulations are perfectly valid and that the power to charge a fee in respect of the retention of a name on the register means just what the ordinary man would suppose it to mean. It would indeed be surprising if the Dental Board's Regulations were found at fault when the machinery for making them is so elaborate. First the Board makes the Regulations, then it submits them to the General Medical Council for approval. If approved (with or without modifications) they are next submitted for the approval of the Privy Council; indeed they have no effect until the Privy Council agrees to them. Finally the twice approved Regulations are laid before Parliament and during the next 21 days either House may present to His Majesty an address praying for the annulment of any Regulation so laid; if such an address is presented, the Regulation may be annulled by Order in Council and is thenceforth void. It is hard to see what greater check upon the legislation of the Dental Board could be devised.

THE HELMINTHIC PARASITES AND THEIR HOSTS.

IN commemoration of Prof. Bernhard Nocht's seventieth birthday about a hundred students and friends interested in tropical medicine have combined in contributing short articles, on subjects which they have made specially their own, to an imposing and sumptuously illustrated volume [1] comprising over 600 pages and issued by the University of Hamburg. The papers cover a large field, of which one rather neglected corner may be explored—the bearing on practical medicine of the inter-reaction of host and helminthic parasite.

As an index of helminthic infection the general eosinophilic reaction, shown by the percentage of eosinophile leucocytes in the cutaneous circulation, is well known. It is perhaps less appreciated, although the fact was established for hookworm over twenty years ago by Ashford, King, and Igaravidez, that eosinophilia frequently fails in individual cases, often where infections are heaviest. A paper by Hung dealing in mass with persons infected with ankylostomes, ascaris, and trichuris, shows as usual that the average eosinophilia is high. One by Schilling deals with a case in which a dead *Tænia solium* coexisted with an eosinophilia of 50 per cent., and another in which, with a ruptured hydatid cyst, there was no eosinophilia at the critical time, but as the result of the host's reaction to flooding of the peritoneal cavity with the cyst's contents an eosinophilia of 50 per cent. was present three weeks later, when it was of no diagnostic value. Local eosinophilic reaction round a worm is

[1] Hamburgsche Universität. Abhandlungen aus dem Gebiet der Auslandskunde, Band xxvi.; Reihe D, Medizin und Veterinärmedizin, Band ii. Arbeiten über Tropenkrankheiten und deren Grenzgebiete. Bernhard Nocht, zu seinem 70 Geburtstag gewidmet von Freunden und Schülern.

among the subjects dealt with by Hoeppli in a paper which mentions work that he has published elsewhere. Such a reaction may be the only evidence in the tissues that a wandering worm has passed that way; or, with necrosis and fibrosis added, it may serve to illustrate the toxic damage inflicted by parasite on host and the host's efforts to neutralise this damage and imprison the intruder. These local reactions, it is pointed out, are easier to understand than, for example, the apparently complete tolerance by the human body of that energetic wanderer, *Loa loa*. It may be, however, that in onchocerciasis we have a clue to this mystery. In redescribing the histology of the marked giant-celled fibrosis which this nematode produces, Hoeppli's paper will emphasise for the reader the mental association between onchocerciasis and subcutaneous nodules which N. A. Dyce Sharp began to break. The latter has shown that in Nigeria the microfilariæ are found, not essentially in the circulation, but in the lymph from the excoriated back, and that only in 30 to 40 per cent. of persons showing microfilariæ can nodules be detected even with the most thorough examination. Either, then, the species in Nigeria is not *O. volvulus*, although no difference has yet been detected, or nodules are present, but lie deep and impalpable: or onchocerca may, like loa, run free in the body, not always producing an imprisoning reaction. It is perhaps impossible to explain the predominant localisation of microfilariæ in the skin of the back on the supposition of deep nodules, and indeed Dyce Sharp's recent report [2] of the escape of a female *O. volvulus* from the granulating stump of a foot, and apparently not from a nodule, lends force to the last of the three suggestions.

Fülleborn supplies an illuminating note on a deliberate massive infection of his own skin with mature larvæ of *Uncinaria stenocephala* of the dog; an itching, weeping, œdematous area formed from which "creeping eruptions" spread. Complete serial sections of excised skin showed that the tracks were caused by nematode larvæ, corresponding in size to those deliberately introduced, and lying in tunnels filled with fluid and leucocytes burrowed out of the epidermis itself, immediately under the stratum granulosum. Fülleborn is inclined to attribute this position to an oxygen-taxis, but it seems even more likely that only by getting as far away as possible from the healthy lymph of man could this immature parasite of the dog survive in the unnatural host. It seems, too, more reasonable to attribute the marked inflammatory reaction which was present to bacterial infection than to the cervical glands of the larvæ with their estimated weight of 0·000 005 mg. At all events the investigation shows, as did that of Kirby Smith [3] that creeping eruption may be caused by a larval strongyle, so confirming Looss's personal clinical experiences; and in diagnosis this possibility must be added to that of a wandering gnathostoma or gastrophilus. It seems, then, that a creeping eruption is evidence of the restlessness of a parasite in the unnatural and unsuitable medium formed by the epidermis of a non-optimal host, a medium nevertheless not so abhorrent to it as the richly lymph-bathed tissues. It is just this tissue factor which seems to be at the bottom of observations reported by Yokogawa. He finds that the feeding of mature larvæ of the dog hookworm *Ancylostoma caninum* to a non-optimal host, such as the guinea-pig, leads to penetration by the larvæ of the wall of the alimentary canal, and their taking the well-known pulmonary-bronchial-œsophageal route to the stomach, with the added handicap of the liver—compared with larvæ who take the same route after penetrating the skin. If, however, they be fed to the host which they like best, the dog, they mostly develop directly in the intestine without further wandering. From their optimum habitat they make no restless efforts to escape; indeed a larger percentage reaches maturity than is the case after a skin infection. The probable bearing of this observation on human hookworm infection is clear; but it remains evident that the opportunity of contact between skin and larvæ in fouled earth is likely to be much more frequent than contact between mucosa and larvæ in fouled water taken to drink. Prophylaxis will, on the whole, remain unchanged.

[2] THE LANCET, 1927, ii., 1290.
[3] Trans. Roy. Soc. Trop. Med. and Hyg., 1926, xx., 6.

PERICARDIAL PAIN.

Dr. J. A. Capps has made an interesting contribution [1] to the vexed question of the rôle of pain in pericarditis. It has long been recognised that patients suffering from pericarditis often complain of pain, and it is equally common knowledge that pericarditis may, on the other hand, be curiously painless throughout its course. Dr. Capps has tried to find some explanation by which these facts can be correlated. In four patients with pericardial effusion, paracentesis was performed and the inner surfaces of the pericardium were explored with a silver wire. No pain resulted; nor did scratching of the visceral pericardium produce it. He reports 12 cases, four of subacute and chronic pericarditis with large effusions, four of simple dry pericarditis, and four of coronary thrombosis and dry pericarditis. In the first eight the pericarditis was not associated with pain, and in the last four the continuous pain (anginal in type), due to the coronary thrombosis, was not in any way modified by the advent of the pericarditis. From these data he concludes that dry pericarditis is usually a painless disease. The explanation of the undoubted pain noted in certain cases of pericarditis is to be found in the involvement of the tissues outside the pericardium, more especially the pleura—an extension of the inflammatory process not uncommon in the pericarditis which complicates rheumatism and pneumonia. Pleuro-pericarditis and antero-posterior mediastinitis are painful, especially a pleuro-pericarditis near the attachment of the pericardium to the diaphragm, where the involvement of fibres of the phrenic nerve causes pain in the neck. Dr. Capps seems to be justified in his conclusions that the pericardium itself is insensitive and that pericarditis per se is painless. The occurrence of pains, of variable site and degree, is due to the involvement of contiguous tissues in the inflammatory process.

[1] Arch. of Intern. Med., 1927, xl., 715.

TUBERCULOSIS IN MONKEYS.

THE serious study of comparative pathology has hardly yet begun, and we are glad to see such good use made of the opportunities afforded by the Gardens of the Zoological Society as is shown in a paper by Dr. H. H. Scott, the Society's pathologist, and Dr. J. Beattie, lately their anatomist, which is published in the current *Journal of Pathology and Bacteriology*. They describe first the anatomy of the lymphatic glands and vessels in the thorax and upper abdomen of the three anthropoids and a number of old-world monkeys; the arrangement is essentially the same in all of them and in man, and new-world monkeys differ only in having no main thoracic duct. Such differences as occur are correlated with size, single glands in small species being replaced by groups of glands in larger animals. The details will be examined in the original by those interested; we take note of the authors' insistence on the necessity of distinguishing the mediastinal from the tracheo-bronchial glands which in human pathology are often confused. They then consider rather fully the anatomy of tuberculosis in 65 cases in monkeys with special reference to an outbreak of the disease in the monkey house in 1926, and compare the lesions with those found in children in Hong-Kong by Dr. Scott. They find that the monkey disease corresponds very closely with the children's disease, and recognise the same two broad groups of primary infection—respiratory and alimentary; the former is more rapidly fatal, causing death by general dissemination and sometimes a secondary alimentary

infection which is promoted perhaps by the fact that monkeys and apes never spit. What is not represented in the monkeys is the adult type of human tuberculosis; there being presumably no tubercle bacilli in their natural homes they never receive the small immunising infections in infancy which so much modify the course of human tuberculosis in later life.

THE VITAMIN ASSAY OF COD-LIVER OIL.

IN our last issue (pp. 148–150) appeared a report describing an extremely interesting attempt to evaluate the vitamin A in cod-liver oil. The attempt was made at the instigation of the Second International Conference (League of Nations) on the Biological Standardisation of Certain Remedies, and was organised in this country by the Accessory Food Factors Committee of the Medical Research Council and of the Lister Institute. The object was to compare the values obtained by a number of different laboratories for the same samples of cod-liver oil submitted to all of them. The tests were to be made by the biological method (growth of rats) and one laboratory was to make a colorimetric test, so that its result might be compared with those obtained by the biological method. Apart altogether from its results the attempt itself marks an epoch, and reveals in a gratifying manner the machinery which we now possess, whereby the desire of the League of Nations could be imparted to a number of different laboratories in this country and their ready coöperation secured. A few years ago there was no means by which such a test could be made save by the goodwill of an individual worker in an individual laboratory. Now, besides the machinery already referred to, there also exists the possibility for a substance to be tested officially for its vitamin value by submitting it to the vitamin-testing department of the British Pharmaceutical Society; indeed, when this department has had time to get under weigh the claim of any proprietary article to contain vitamins should not be accepted unless substantiated by such a test. The Empire Marketing Board, too, has a research department devoted to the study of problems connected with the vitamin values of foodstuffs. Ten years ago the need for these agencies was already strongly felt, but their establishment seemed a very remote dream, and there is ground for satisfaction that in that short time they have come so fully into existence.

As regards the actual results of the tests the findings of the different laboratories are in very tolerable agreement where a simple grading of the oils is concerned, but it is pointed out that in order to assign actual quantitative values to the vitamin A content of the different oils by the biological method, it would be necessary to use far more experimental animals than was in this case possible, since the variation in the performance of individual rats is very considerable. The colorimetric method gave results in agreement with the results of the biological tests, but the report urges that before any conclusion is drawn as to its general validity, a comparison should be made of the results given by it and by the biological method, in the assay of vitamin A in substances other than cod-liver oil, such as butter, palm oil, and cereal oil. The different cod-liver oils used were prepared by different methods and had different histories. The tests show that the shorter the history of the oil and the less its exposure to the air the greater its potency in vitamin A, even the factor of the oil being kept in a full or a half-filled bottle seemed to make a marked difference; the liability of vitamin A to destruction by oxidation is, of course, well known.

Following the report appeared a paper (pp. 150–152) by Miss J. L. Leigh Clare and Miss K. M. Soames, who made the test described above for the Lister Institute, giving further details of their test and the results of their examination of the same series of oils for vitamin D. In testing for this vitamin they find the same wide range of behaviour in individual rats, as in testing for vitamin A, but they were able to grade the oils tested in the same rather rough way as was possible in testing for vitamin A, and to say definitely that whatever the original relationship, there was no fixed quantitative ratio between the amounts of vitamin A and of vitamin D in the oils at the time of testing. They point out that the chief medicinal value of cod-liver oil lies in its content of vitamin D and that to evaluate the vitamin A in a certain oil furnishes no evidence as to its content of vitamin D. They therefore criticise the biological method of testing cod-liver oil, laid down in the United States Pharmacopœia, which aims at the biological assay of vitamin A only.

Everyone who has worked with tests of this type knows how difficult it is to get clean-cut results, unless a vast number of animals is used, and the papers at present under consideration should also be useful in showing what degree of accuracy can be looked for and what degree it is quite useless to expect unless a large series of animals can be used.

THE TAVISTOCK CLINIC.

THE Tavistock Clinic has celebrated its seventh birthday by a general stocktaking, the results of which have just been published. In December, 1919, it was decided to open a psychotherapeutic clinic on an experimental basis of three years, with the understanding that it should be closed if and when hospitals could meet the need. Eight years later despite the establishment of psychotherapeutic clinics at hospitals, there is no talk of closing down, but rather of further expansion. Largely owing to the enthusiasm and wisdom of its honorary director, Dr. H. Crichton Miller, and the devoted services of its first honorary secretary, Mrs. Leith Ross, the Tavistock-square Clinic has come to stay. Since the first patient was received on Sept. 27th, 1920, 2545 cases have passed through it, and it has established a place deep in the hearts of very many of them. Between the Scylla of poverty and the Charybdis of institutionalism, the clinic steers a difficult course. On the latter it has certainly not foundered, for it has a peculiar personal touch which no hospital can well provide. The ideal of the consulting-room has been maintained, although, so greatly has the work outgrown its premises, psychotherapy must now be practised in an area and the children's department works in a basement kitchen. About one-third of the cost of treatment is contributed by the patients, although inability to pay anything is never a reason for refusing admittance. Many of the staff serve on an honorary basis, but workers are still handicapped by the necessity for bazaars, matinées, and other forms of begging inseparable from an inadequate revenue. The history of the furniture in use at the clinic would make a good story; the report asserts that, however it may have been obtained, it was rarely purchased and never stolen. Whether or not the £30,000 they desire would drive them on to Charybdis only the experiment would show; without doubt valuable research material is being wasted for lack of an adequate institute. The children's department deals with every kind of maladjusted child, and an interesting table shows the very high proportion of cases in which neurotic symptoms, other than those complained of, were revealed on investigation. The trained social worker plays an integral part in the treatment of the child patient, for she alone can provide the physician with these data of home and family which are essential pieces in the puzzle. An outstanding feature of work at the clinic has always been the breadth of the survey made of each patient. The case-paper presents the physician with a formidable array of questions covering every system of the patient's economy. The focal sepsis, the endocrine pattern, the stigma of degeneration, the faulty function of any organ or system—all these are taken into consideration before the purely psychogenic factors are allowed to dominate the picture. A laboratory was installed in 1926. A routine physical examination is followed by a labora-

tory overhaul, and, when necessary, by advice from suitable specialists on the honorary consulting staff. Every kind of psychotherapy is in use, but on the whole simple re-education and "autognosis" is most often used. The results are, in general, satisfactory. A questionaire was sent out last year to old patients, inquiring of their welfare. Five hundred replies were received; 44 per cent. recorded "much" benefit from treatment, 32 per cent. "some" benefit, and 22 per cent. little or none. The benefit had been maintained in 61·5 per cent. of the first group, increased in 30 per cent., and 80 per cent. remained fit for work; 17·7 per cent. of those who had received some benefit had improved since treatment. A good reference library for staff and students has now been accumulated. Not least of the activities of the clinic are the lecture courses, both for the public and for medical practitioners. The total attendance during the last seven years is estimated at 27,100, and the lectures are in many cases followed by seminars for more detailed study of the subject. Stress is laid on the practical and prophylactic side of the work. "In the post-war days," says the report, "the audiences were large and fashionable; now they are perhaps smaller, certainly less fashionable, but decidedly more intelligent. Intelligent teachers and thinking parents are recognising more and more that out of the experience of the consulting-room and the clinic there are lessons to be transmitted which have value in the upbringing of the most normal children. . . . Thinking people are recognising that much of our work is devoted to the abnormalities of those who were normal to start with and have been made abnormal by the treatment they have received, generally at the hands of their elders, and often from those who loved them most." We congratulate the Tavistock Clinic on the past and wish it every success in the future.

Dr. Aldo Castellani, Director of Tropical Medicine at the Ross Institute and Hospital for Tropical Diseases, Putney Heath, has been appointed an Honorary Knight Commander of the Order of St. Michael and St. George. Dr. Castellani received from the King of Spain a few weeks ago the Grand Cross of the Order of Civil Merit. He became C.M.G. in 1920, and also holds Italian and Serbian decorations granted in recognition of his outstanding services in the elucidation of tropical disease and as a bacteriologist.

INDEX TO "THE LANCET," VOL. II., 1927.

THE Index and Title-page to Vol. II., 1927, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

DONATIONS AND BEQUESTS.—Sir Arthur Everett Shipley, F.R.S., Master of Christ's College, Cambridge, besides other bequests, left £5500 to Christ's College for the endowment of a Fellowship.—During the past month the Royal Manchester Children's Hospital have received over £4000, including a gift of £1000 from Mr. A. W. Cowburn to endow a cot, and legacies of £500 each from Mrs. H. Heynssen and Miss Rosina Lipman.—The Rev. Henry Swann, of West Kensington and Boscombe, Bournemouth, vicar of St. Thomas's, Charterhouse, E.C., who left £113,432, made large charitable gifts, including £1000 to the British Home for Incurables, Streatham, and after other bequests the residue of his property, which amounts to over £20,000, to King Edward's Hospital Fund.—Inspector-General Henry Hadow, who lived at Southsea, left £10,000 stock to Epsom College for the creation of pensions for medical men and their widows, and £100 each to St. Peter's Hospital, Covent-garden, and the Portsmouth and Southern Eye and Ear Hospital, and after other bequests the residue of the property to the Royal Portsmouth Hospital to endow beds to be known as the Ellen Beatrice beds.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLX.—TREATMENT OF MINOR DEGREES OF NASAL OBSTRUCTION.

II.*—NASAL POLYPI AND ETHMOIDAL DISEASE.

NASAL polypi cannot properly be considered except in relation to ethmoidal disease. The day has long passed when a nasal polypus was regarded as a benign new growth. Woakes first pointed out that the polypus was merely a symptom of underlying bony disease, and Lack later set our conception of this abnormality on a sound pathological basis. It is now almost universally conceded that the presence of nasal polypi and of ethmoidal inflammatory changes are intimately associated, a presumption which is strengthened by the fact that the more thoroughly the bone at the base of a polypus is removed, the less is the likelihood of the polypus recurring. It is then of the utmost importance that the practitioner should have some criterion as to the amount of associated bony disease present, and it may be taken that clinically the number and nature of the polypi give a valuable indication. The presence of merely one or two pedunculated polypi shows that the osteitis is localised or even arrested; but when numerous small polypi occur, especially if associated with unhealthy mucous membrane in the vicinity, the bony affection is probably widespread and active. Thus by visual inspection of the nasal cavities the practitioner may glean much useful information as to the prognosis and the extent of the necessary operative treatment. A good skiagram is of the utmost value in determining the presence of an associated accessory sinus infection or the extent of the ethmoidal disease. In the case of a choanal polyp, the skiagram may show some involvement of the maxillary antrum, although paradoxically enough the antrum may on transillumination appear to be brighter on the affected side.

Incidence and Symptoms.

Polypi are most often met with during the third and fourth decades, and are stated to be very rare under the age of 10 years; but during the past year I have seen three cases in girls of 8 years and under, in which the polypi were removed with the snare, and shown by histological examination to be of the ordinary character. They vary greatly in size and number, but usually appear as greyish, gelatinous, oyster-like masses, especially when they are of the pedunculated variety. If, however, they protrude into the vestibule, or into the naso-pharynx, they may be reddish in colour and simulate a papilloma. Almost invariably they originate from the ethmoidal region under cover of the middle turbinal, and this is an important factor in the correct diagnosis. The other point to be borne constantly in mind is that they are freely movable with a probe, and examination with the probe should therefore be the invariable rule. Observance of the above two points should prevent mistakes in connexion with hyperplastic growths; these are not thus freely movable and often spring from the inferior meatal region. Other conditions are less likely to be mistaken for polypi, but it must not be forgotten that a malignant growth of the ethmoid may be overlaid by polypi, so that the real condition only becomes evident after the latter have been removed. Frequent attacks of spontaneous epistaxis in the presence of polypi should arouse suspicion of malignant disease. The use of cocaine plus the probe will serve to distinguish between true polypi and mere turgescence of the turbinals. The main symptoms are those of nasal obstruction, and patients often complain that such obstruction varies with the state of the barometer, being aggravated by cold or damp weather. Occasionally the sufferer states that he has something which flaps like a valve

* Part I., on Deflections of the Septum and Abnormalities of Turbinate Bones, appeared last week.

in the nose, or, as mentioned above, the polyp may even present at the anterior naris. The obstruction is frequently associated with a profuse nasal discharge of varying consistency. There is often a peculiar nasal intonation of the voice, and in severe cases the nasal bridge may be obviously distended. Aprosexia and anosmia are not infrequent, whilst supra- or infra-orbital neuralgia may be complained of. Hay fever and asthma are often aggravated, if not caused, by the presence of polypi, whilst a dry purposeless cough is frequently a part of the train of symptoms. A certain degree of deafness or giddiness is at times produced, and some authorities state that polypi may be a cause of epilepsy.

Prognosis.

Prognosis is extremely difficult. If polypi are left untreated, they tend to increase in size and number, and may in time lead to marked impairment of the general health or even to serious complications. It is obvious that some form of operative interference is necessary, and that topical applications can have no curative effect where bony changes are present. A few prognostic points may however be formulated.

1. A single pedunculated polypus—especially if cystic in nature—does not tend to recur after local removal.
2. Polypi associated with obvious disease of an accessory sinus are amenable to treatment if the patient is prepared to face the appropriate operation.
3. Even though the patient refuse a radical operation he may be promised considerable relief of the obstructive symptoms if he will permit of occasional removal of the polypi by means of the snare.
4. In the case of the choanal polypus, its removal is usually curative in effect, as the bony disease has almost invariably been arrested by the time the polypus is discovered.

Treatment.

The treatment may be: (1) simple removal of the polypi by the snare; or (2) radical removal of the polypi and the underlying diseased bone.

In *simple removal* it is necessary to have: (*a*) good anæsthesia; (*b*) good illumination; and (*c*) a good snare. Local anæsthesia suffices, and may be induced by the application of cotton-wool pledgets soaked in 10 per cent. cocaine solution (and well squeezed out) to the polypi and their attachments. Efficient illumination is an obvious necessity where the work has to be done in a confined space such as the nasal cavity. The best snare is Glegg's, which has the advantages mentioned in the previous article, and in which the end of the barrel is crossed by a bar. This prevents the wire from being drawn into the barrel, and the polypus is thus torn away from its attachments and not merely cut through at the level of the wire as by a sharp guillotine.

The wire noose is gently slipped round the lower end of the polypus and then with a slight side-to-side movement is insinuated under cover of the middle turbinal to reach the attachment of the growth. The noose is then tightened, and the polypus sharply pulled away from its attachment. As a rule, the whole of the pedicle will come away, often accompanied by a scale of the subjacent bone. In some cases when the polypi are growing from the anterior end of the middle turbinal, the latter may be removed with the polypi; such removal is beneficial as it diminishes the likelihood of recurrence. Should bleeding obscure the view, it is well to press on the area with a mop of cotton-wool soaked in hydrogen peroxide, which for this purpose is a better and safer styptic than adrenalin. If both sides of the nose are affected, we should endeavour to clear one side completely in order to restore nasal respiration, and defer treatment of the second side for a week or ten days. Rather brisk hæmorrhage may follow, but can usually be controlled by applying compresses of iced water to the bridge of the nose; if it persist a little cotton-wool, soaked in hydrogen peroxide, may be temporarily packed into the nose. This should be removed in ten minutes, when a loose pledget of dry wool may be inserted in the vestibule to prevent blood trickling over the lip. In no circumstances should the nose be tightly packed with gauze, lest severe sepsis supervene. The immediate after-treatment consists in trickling a few drops of hydrogen peroxide into the nostril at frequent intervals for two to three days; later a mild nasal wash should be used several times daily for a week. Another important part of the after-treatment is the regular inspection of the nose for recurrence of growth and the immediate removal thereof. Recurrences should be dealt with promptly.

With patience and perseverence even bad cases of polypi can thus be cured, but if after several careful removals the condition persists, a more radical procedure must be adopted.

For the more *radical operations* the question of anæsthesia must first be considered. Local anæsthesia by cocainisation (with or without adrenalin) may suffice, especially if induced by Sluder's method, where a pledget of wool dipped in a saturated solution of cocaine is pushed up under the posterior end of the middle turbinal whilst a similar one is pushed up into the antero-superior part of the nose, both being left in situ for ten minutes. In this way the branches from the spheno-palatine ganglion and the nasal branches of the ophthalmic division are dealt with, and excellent anæsthesia results. In many cases, however, it is preferable to induce general anæsthesia after packing the nasal cavities with wool soaked in 10 per cent. cocaine. If general anæsthesia be employed, it is important to remember that the use of adrenalin to stop hæmorrhage during the operation may be fraught with danger. As far as possible the polypi are first removed with a snare or Luc's forceps, and the subjacent diseased bone is then cut away by Luc's or Grunwald's forceps, or by Meyer's ring knife. It is of the utmost importance to avoid injury to tne cribriform plate, and these manipulations should therefore be performed below the level of attachment of the middle turbinal, and the ring knife must be drawn from behind forwards and slightly downwards. Any attempt to cauterise the base of the polypus is at once useless and dangerous.

The after-treatment is as before—instillation of hydrogen peroxide drops will almost invariably arrest the hæmorrhage, and no attempt to pack the nose tightly is justifiable, save as a last resort.

Naturally, if associated accessory sinus disease be present, it must be dealt with by suitable operation. Kisch has lately reported an external operation for the treatment of ethmoidal affections, but at present its execution should be confined to those who are accustomed to perform extensive intranasal operations.

Difficulties which may Confront the Operator.

In a small percentage of cases the removal of polypi seems to cause a violent reaction in the ethmoidal region, and when next seen the patient has produced a copious crop of œdematous polypi. In such, it is well to hold one's hand and wait for the congestion to subside ere removing these fresh polypi. If this be done, a much longer period of immunity from recurrence will follow the second operation. In the treatment of the choanal polypus, a general anæsthetic is desirable, when a finger may be passed into the naso-pharynx to facilitate adjustment of the loop of the snare. Here, again, Glegg's snare will be found most convenient, for a large loop may first be passed over the polypus and then easily adjusted so that it will grip the pedicle firmly. In some cases it may be found necessary to introduce a pair of curved forceps into the naso-pharynx, grasp the pedicle therewith, and tear it from its attachment.

The major difficulties encountered, however, are due to spurs and deviations of the septum. Such obstructions may not be recognised until the anterior polypi have been removed, and it is in these circumstances that efficient illumination and cocainisation are of the utmost value. If the hæmorrhage be profuse and obscure the view, it is better to have the strength of mind to desist for the time being, and to postpone the completion of the operation for 10 to 14 days. Manipulation in the dark will lead only to incomplete removal of the polypi and the causation of troublesome adhesions. In cases of marked septal deflection it may be necessary, or at least advisable, to perform a submucous resection before dealing with the polypi.

Finally, it should be borne in mind that children tolerate cocaine badly, and strong solutions therefore should on no account be used for them.

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Special Articles.

MILK CONSUMPTION AND THE GROWTH OF SCHOOL-CHILDREN.

Preliminary Report on Tests to the Scottish Board of Health.

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DURING the past few years a number of tests have been carried out in America [1 2 3] to determine the nutritive value of milk for children. More recently a test under exact conditions in a labour colony for boys, where the whole diet was controlled, was carried out by Dr. Corry Mann [4] for the Medical Research Council. The results of all these tests which are in general agreement have demonstrated the high nutritive value of milk for growth.

In 1926–27 a large-scale test was carried out in schools in seven cities and towns in Scotland and in Belfast to determine whether the results obtained by Corry Mann under the rather special conditions of an institutional school would be obtained in children attending elementary schools and receiving the varied and changing diet of the ordinary working-class household.

The tests were conducted under the auspices of a committee appointed by the Board of Health for Scotland with Sir Leslie Mackenzie as chairman. The committee consisted of the school medical officers for the cities and towns where the work was carried out. The collection of data was undertaken by four women medical officers. The clinical examination of the children was made by the late Dr. L. D. Cruickshank, of the Scottish Board of Health, and the school medical officers.

A repeat test is at present being undertaken under the supervision of Dr. Gerald Leighton, Scottish Board of Health, and a full report will be issued when the new test is completed.

The results obtained to date, however, so strongly confirm those of Corry Mann and previous workers which are of such importance in public health that it has been thought advisable to issue the present interim report.

Method.

At each centre four groups of children were taken, each from 40 to 50, according to the size of the classes in the school. One group received whole milk, a second separated milk, and a third a biscuit of the same energy-yielding value as the separated milk. The fourth group, which acted as control, received no supplementary feeding. The test began at the end of November and finished at the end of June. The Belfast test did not begin till the end of January; it is, therefore, not included in the results of the seven month experiment.

At Peterhead and Greenock the children were between 5 and 6 years of age, at Dundee and Edinburgh between 8 and 9 years, and at Aberdeen and Paisley between 13 and 14 years. Glasgow and Belfast had a series of groups of each of the three ages. There were thus under test children at the beginning, the middle, and the end of school life. The 5- to 6-year-old children received three-quarters of a pint of milk per school day, the 8 to 9 one pint, and the 13 to 14 one and a quarter pints. The milk was given at school.

Owing to unforeseen difficulties the tests in Glasgow had to be rearranged about three months after they had been begun, and the whole-milk group was dropped. The Glasgow data, therefore, are limited to the control, biscuit, and separated milk groups.

Weights and Heights.

It was intended to weigh the children with only one layer of underclothing. This was found to be impracticable. The children were therefore weighed in indoor clothing, without shoes, and there are considerable fluctuations in the weight figures, even those taken on successive days. The average weight of clothing was ascertained month by month and the necessary addition or deduction made in the final weight figure. Owing to these circumstances the records of individual weights are not so reliable an indication of the influence of milk as the figures showing the increase in height.

The weights were recorded to the nearest quarter pound. The heights were recorded to the nearest quarter inch, the children being measured without shoes. The measurements were taken on three consecutive days at the beginning and end of the test and at intervals of about one month during its progress.

Before the results were calculated such cards were rejected as showed absence due to serious illness, about 25 per cent. of missed feeds, doubtful increases in weight or height, &c. This accounts for the decreased number of children available for the final analysis.

The *average* increase in height and weight has been worked out per group at each age and in each centre, giving the results shown in Table I.

TABLE I.—*Average Increase in Height (Inches).*

Age.	—	Controls.	Biscuits.	Sep. Milk.	Whole Milk.
5–6	Peterhead ..	1·425	1·392	1·568	1·550
	Greenock ..	1·470	1·455	1·625	1·543
	Glasgow ..	1·267	1·101	1·500	—
8–9	Edinburgh ..	1·224	1·286	1·457	1·483
	Dundee ..	0·972	0·931	1·209	1·105
	Glasgow ..	1·125	1·089	1·297	—
13–14	Aberdeen ..	1·395	1·263	1·602	1·622
	Paisley ..	0·889	0·841	1·292	1·365
	Glasgow ..	1·146	1·265	1·734	—

TABLE II.—*Average Increase in Weight (lb.).*

5–6	Peterhead ..	1·773	1·973	2·983	2·741
	Greenock ..	1·595	1·200	1·969	1·994
	Glasgow ..	2·784	2·234	2·407	—
8–9	Edinburgh ..	2·132	2·972	3·238	3·330
	Dundee ..	2·433	2·404	2·659	2·556
	Glasgow ..	2·292	2·266	3·471	—
13–14	Aberdeen ..	5·212	4·939	4·790	5·837
	Paisley ..	3·986	3·934	5·242	4·821
	Glasgow ..	3·855	4·809	5·959	—

The height increases when all the groups at one age, irrespective of locality, are combined, show very strikingly the influence of the milk supplement in aiding growth, and the failure of the biscuit supplement. Table III. gives the mean increase (in inches) in each group at each age, with the probable error.

At every age the increase in height of the whole-milk or the separated-milk groups is significantly greater than that of the biscuit or control groups, while the difference in increase in height between the two milk groups is insignificant. The supplementary biscuit, on the other hand, fails to exercise any significant stimulus in the 8-year-old group, and in the 13- and 5-year-old groups has an almost significantly retarding effect.

As the milk groups (whether separated or whole) showed a distinct improvement in growth over the non-milk—i.e., biscuit and control—groups, the figures of the *average* increase at all ages were arranged into two groups, with the results shown in Table IV.

This seven months' experiment thus shows an average monthly increase of 0·17 in. and 0·42 lb. in the non-milk groups, and of 0·21 in. and 0·52 lb. in the milk groups. In the much lengthier experiment by Corry Mann the corresponding figures were 0·15 in. and 0·32 lb. for all boys on the basal diet and 0·22 in. and 0·58 lb. for all boys receiving the supplement of one pint of pasteurised milk every day, the milk group increases in height in both

TABLE III.—*Mean Increase (Inches) in Each Group at Each Age, with the Probable Error.*

Group I.	Group II.	Mean I.	Mean II.	M. I.–M. II.	P.E.	Remarks.
Age 13.						
Biscuits.	Controls.	1·1279	1·2175	−0·0896	±0·0401	Biscuits almost sig. worse.
Whole milk.	,,	1·5122	1·2175	+0·2947	±0·0469	Whole milk sig. better.
Sep. ,,	,,	1·5524	1·2175	+0·3349	±0·0417	Sep. milk sig. better.
,, ,,	Biscuits.	1·5524	1·1279	+0·4245	±0·0444	,, ,,
Whole ,,	,,	1·5122	1·1279	+0·3843	±0·0493	Whole milk sig. better.
,, ,,	Sep. milk.	1·5122	1·5524	−0·0402	±0·0507	No sig. difference.
Age 8.						
Biscuits.	Controls.	1·1160	1·1000	+0·0160	±0·0278	No sig. difference.
Whole milk.	,,	1·3233	1·1000	+0·2233	±0·0318	Whole milk sig. better.
Sep. ,,	,,	1·3355	1·1000	+0·2355	±0·0254	Sep. milk sig. better.
,, ,,	Biscuits.	1·3355	1·1160	+0·2195	±0·0281	,, ,,
Whole ,,	,,	1·3233	1·1160	+0·2073	±0·0340	Whole milk sig. better.
,, ,,	Sep. milk.	1·3233	1·3355	−0·0122	±0·0321	No sig. difference.
Age 5.						
Biscuits.	Controls.	1·3443	1·4026	−0·0583	±0·0291	Biscuits almost sig. worse.
Whole milk.	,,	1·5458	1·4026	+0·1432	±0·0298	Whole milk sig. better.
Sep. ,,	,,	1·5697	1·4026	+0·1671	±0·0295	Sep. milk sig. better.
,, ,,	Biscuits.	1·5697	1·3443	+0·2254	±0·0303	,, ,,
Whole ,,	,,	1·5458	1·3443	+0·2015	±0·0305	Whole milk sig. better.
,, ,,	Sep. milk.	1·5458	1·5697	−0·0239	±0·0309	No sig. difference.

Sig. = significant and significantly.

experiments, thus approximating very closely in spite of the Scotch children receiving the supplement only five days per week.

The children in the different groups at the various centres were examined at the end of the experiment and clinical observations made. Independent reports were also handed in by the headmasters of the schools. These clinical reports, which cannot be expressed in figures, show that at most of the centres the children who had received milk appeared to be in better condition than those receiving no milk. It was noted that, on the whole, they had glossier hair and clearer complexions and held themselves more erect. At other centres this difference was less marked, and in Glasgow no distinct difference could be detected. The most marked improvement in the children in the milk groups was shown in children who had been in poor condition at the beginning of the test.

TABLE IV.

—	Milk groups.		Non-milk groups.	
	Average increase—		Average increase—	
	in height.	in weight.	in height.	in weight.
	inches.	lb.	inches.	lb.
All ages ..	1·470	3·617	1·212	2·974

From the particulars gathered as to the home dietary of 626 households it would seem that the average milk consumption in the home was 2·5 pints per head per week. The total milk consumption of the children under test in these homes was then calculated on the assumption that the average consumption per head in the household to which the child belonged was the home consumption of that child, to which was added the amount received at school. The rate of growth of children receiving more than the average of the total milk consumption (home plus school) was compared with that of children receiving less than the average. Table V. shows the average rate of increase in height, in the "over average" and "under average" milk consumption groups.

TABLE V.

Age of children	5–6	..	8–9	..	13–14
Increase (inches) in height of—					
"Over average" group ..	1·58	..	1·37	..	1·51
"Under average" group ..	1·44	..	1·19	..	1·21
Increase (per cent.) of "over average" to "under average" group	9·4	..	615·5	..	24·2

Conclusions.

From this survey of the data it seems probable that, in the final report, it will be possible to draw the following conclusions:—

1. The addition of the milk to the diet of school-children, during the seven months' experimental period, has been accompanied by a rate of growth as indicated by an increase in both height and weight 20 per cent. greater than that in children not receiving the extra milk.

2. This increase in rate of growth has been accompanied by an improvement in the general condition of many of the children receiving milk.

3. Separated milk is of great value for promoting growth. Its nutritive value for children would appear to be under-estimated.

The writer wishes to record his indebtedness to Miss M. L. Clark, who has prepared the above tables, for valuable services in connexion with the supervision of the tests during their progress. Dr. Lewis D. Cruickshank, who superintended the investigation from the administrative side on behalf of the Committee, died towards the end of the test period, and we can only record our profound regret that we have not had the continued advantage of his intimate knowledge of school and social conditions.

The cost of the above tests was defrayed by a grant made by the Empire Marketing Board to the Rowett Research Institute, Aberdeen.

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SHEFFIELD HOSPITAL SUNDAY FUND.—This fund will keep its "diamond jubilee" this year, having been established in 1868. It is hoped to raise £6000, being £100 for each of the 60 years. Last year the amount was £3648, the successful penny-in-the-pound scheme having retarded the progress of the fund. The number of patients treated in the Sheffield hospitals last year equalled about one-quarter of the population of the city—there were more than 14,000 in-patients and more than 111,000 out-patients.

THE APPARENT INCREASE OF CANCER.

By D. F. SHEARER, M.B. Oxf., F.R.C.S. Eng.

Some years ago Dr. Stevenson published (in the annual report of the Registrar-General for 1917) an exhaustive analysis of the records of the deaths from cancer in order to determine how far the apparent increase of cancer was actual and to what extent it was the result of improved methods of diagnosis and certification, and concluded that these improvements were not sufficient to account for the increase. The present investigation was made to learn whether the conclusions then arrived at were confirmed by the figures of more recent years but the method adopted differs from that of Dr. Stevenson in three important particulars. For the most part the conclusions of Dr. Stevenson were based on crude death-rates. Here only standardised figures are used; and the error that may arise from the use of crude rates is well shown in the case of the tongue in the male. Using crude rates cancer of the tongue rose between 1913 and 1925 from 56 to 63 per million living; standardisation shows that in fact cancer of the tongue had fallen from 70 to 63 per million living. In the second place Dr. Stevenson grouped the sites of cancer into accessible and inaccessible, a distinction which is one of opinion and not of statistical fact. Here the grouping is made by rate of increase or decrease, and the resulting composition of the groups speaks for itself in relation to improvement in diagnosis and certification. Thirdly, the question is investigated of what change has taken place in regard to a large group of ill-defined deaths in later years of life which are attributed to "old age."

Table I. shows the actual numbers of deaths in both sexes, at all sites and in all age-groups of 1925 and 1913; and the standardised figures for 1913 based on the change in population at each age-group.

TABLE I.—*Showing the Numbers of Deaths in 1925 and in 1913 and the Numbers in 1913 standardised for Change of Population at 12 Age-groups, at All Sites in each Sex, and for the Tongue and Jaw in the Male Sex.*

—	All ages.	0–35	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
MALES.													
All sites	24,002	606	329	752	1358	2466	3265	4071	4181	3447	2247	948	332
	16,918	626	358	726	1244	1777	2342	2833	2745	2189	1335	539	204
	21,744	*608*	*369*	747	*1606*	2291	3230	3900	3541	2824	1709	691	228
FEMALES.													
All sites	27,937	727	746	1467	2346	3149	3318	3809	3963	3609	2667	1457	679
	22,021	724	820	1373	1965	2480	2801	3078	3062	2728	1806	813	371
	28,235	703	*924*	*1550*	*2493*	*3273*	*3809*	*4160*	3884	3464	2400	1081	494
MALES.													
Tongue	1,180	5	4	15	70	136	202	232	226	165	83	33	9
	995	4	14	50	97	145	170	158	158	106	65	21	7
	1,306	4	*15*	*52*	*126*	*188*	*235*	219	205	136	*85*	27	8
Jaw	523	13	3	17	23	61	92	87	88	68	47	19	5
	482	21	6	9	39	52	82	90	80	55	27	14	7
	624	*20*	*6*	9	*51*	*67*	*113*	*124*	*103*	*74*	34	17	*8*

Standardised figures for 1913 exceeding the corresponding figures for 1925 shown in italics.

TABLE II.—*Showing the Number of Cancer Deaths in 1925 in Various Groups Below and Over 65 Years as a Percentage of Corresponding Number of Deaths in 1913.*

—	All ages.	Under 65.	Over 65.	Deaths in 1925.
MALES.				
Group A ..	86	78	99	5,205
„ B ..	114	104	123	13,528
„ C ..	139	123	178	5,269
All sites ..	110	100	124	24,002
FEMALES.				
Group A ..	77	66	91	3,887
„ B ..	105	94	110	11,427
„ C ..	120	120	120	1,546
„ D ..	99	95	111	11,077
All sites ..	100	96	110	27,937

The number of deaths in 1925 was 51,939, while the actual and standardised figures for 1913 were 39,139 and 49,979 respectively. The increase of 12,800 is therefore reduced to 1960; made up of an increase in the male sex of 2258 and a decrease in the female of 298. Dividing into two main age-groups, under and over 65, it appears that at the lower age there is an increase in the males of only 96 and a decrease in the females of 1350; while in the later years the males increase by 2162 and the females by 1052.

TABLE III.—*The Components of Groups A, B, C, and D.*

A.		B.	
MALE.	FEMALE.	MALE.	FEMALE.
Buccal.	Buccal.	Stomach.	Stomach.
Liver.	Liver.	Œsophagus.	Œsophagus.
Testes.	Brain.	Pharynx.	Pharynx.
Brain.	Abdominal cavity.	Skin.	Skin.
Abdominal cavity.	"Others."	Breast.	Intestines.
"Others."	Mesentery.	Intestines.	Rectum.
Mesentery.		Rectum.	

C.		D.
MALE.	FEMALE.	FEMALE.
Larynx.	Larynx.	Ovary.
Lung.	Lung.	Uterus.
Pancreas.	Pancreas.	Vulva.
Kidney.	Kidney.	Breast.
Prostate.	Bladder.	
Bladder.	Other specified organs.	
Other specified organs.		

TABLE V.—*Giving the Increases and Decreases between the Figures for 1925 and 1913 (Standardised) at each Age-group for All Sites, for Group C, and for "Old Age."*

MALES.

Ages ..	0–35	35–40	40–45	45–50	50–55	55–60	60–65	65–70	70–75	75–80	80–85	85–
All sites ..	−2	−40	+ 5	−248	+175	+ 35	+171	+640	+583	+ 538	+ 257	+4
Group C ..	+1	−12	+35	+ 47	+112	+131	+159	+227	+256	+ 186	+ 102	
Old age ..	..	..	..	..	..	..	..	−447	−1600	−2000	−2900	

It has not been found possible to print the full table showing the actual and standardised figures for each site. The male tongue and jaw are, however, given to show how the results are arrived at and these sites have been selected in view of Dr. Stevenson's statement in 1917. "The jaw and tongue furnish

instances the significance of which can hardly be called in question."

The proportion which the deaths at each site in 1925 bore to the deaths at the same site in 1913 (standardised) was then calculated and fell into three natural groups in the male. Similar groups were formed for the females together with a fourth which contained all sex organs. Table II. shows the result, and Table III. gives the constituents of each group. Group A is clearly composed of sites at which the diagnosis of cancer can be made by any practitioner; Group C is equally clearly composed of sites at which the diagnosis of cancer can only be made and is only made by practitioners who have devoted special attention to diseases of these sites. Group B includes cases of both varieties. It is interesting to note that Group D corresponds almost exactly with the figures for all sites in the same sex.

TABLE IV.—*Showing the Number of Deaths from Cancer in 1925 and 1913 (Standardised) Under and Over 65 and the Increases and Decreases; together with the Decreases in "Old Age."*

	Males.		Females.	
	Under 65.	Over 65.	Under 65.	Over 65.
1925	12,847	11,155	15,562	12,375
1913	12,751	8,993	16,912	11,323
Increase or decrease	+96	+2,162	−1,350	+1,052
"Old age" decrease	..	−6,989	..	−5,510

Taken in conjunction with Table V. it is evident that Group C is the chief factor in producing the increase at lower years in the male; and it will be noticed that in each of the three ten-year age-groups up to 65 Group C is responsible for all the increase. And whatever opinion may be held as to the propriety of taking Group C as evidence of improvement in diagnosis the statistical fact is indisputable that out of an aggregate increase in both sexes of 1960 Group C is responsible for 1722.

During the period under investigation there has been a decrease after standardisation in the number of deaths attributed to "old age" of no less than 12,499: in the males of 6989 and in the females of 5510. Table VI. shows the percentages of deaths from cancer, old age, and other causes at the various age-groups in both years, from which it is clear that if the decrease in "old age" is distributed between cancer and other causes in due proportion the bulk if not the whole of the increase in cancer is accounted for. There is, however, one point at which the three factors, increase of population, improvement in diagnosis in Group C, and decrease of "old age," seem to be insufficient to account for the rise: that is between the ages of 65 and 70 in the male. The standardised increase at this age-group is 640, of which 227 are contributed by Group C. The decrease in "old age" is, however, only 447, and unless we were to assume that all these were cancer cases some further explanation is required. For some reason the rate of increase at this age is greater than in either the preceding or the succeeding five-year group, and inspection of the rates of increase at sites shows that it is attributable to an abnormal rise at two sites—stomach and intestine. It may be worth noting that at this age-group the fall in the death-rate due to causes other than cancer is less than in either of the adjacent age-groups.

TABLE VI.—*Giving the Deaths from Cancer, "Old Age," and other Causes Out of the Total Deaths at Age-groups Over 55 in 1925 and 1913.*

Ages	55–60	60–65	65–70	70–75	75–80	80–
Males.						
1925.						
Cancer	19·3	19·8	17·4	15	11	6
Old age	—	—	1·4	6·8	13	25·7
Other causes ..	80·6	80·2	81·2	78·1	76	68·3
1913.						
Cancer	15	15·4	14·1	10·3	8·3	4·5
Old age	—	—	3·2	12·7	21·4	45·1
Other causes ..	85	84·6	82·7	77	70·3	50·4
Females.						
1925.						
Cancer	24	22·6	19·1	14·7	11	6·4
Old age	—	—	2	7·6	13·8	28·2
Other causes ..	76	77·4	78·9	78·7	75·2	65·4
1913.						
Cancer	21·4	19·8	17·1	12·6	9·4	5
Old age	—	—	3·7	13·1	22·1	40·8
Other causes ..	78·6	80·2	79·2	74·3	68·5	54·2

Generally speaking, the statistics here brought forward tend to show that the increase of deaths from cancer is merely an apparent increase, and that there is in fact some slight decrease after due allowance is made for change of age-distribution of the population and for improvements in diagnosis and certification.

MEDICINE AND THE LAW.

A Gap in the Factory Acts.

WHILE the general revision of the Factory and Workshop Act seems for the moment to be as far off as ever, a specific omission in the existing law was disclosed at a recent inquest at Norwich. A fire occurred at a match store at Timberhill, Norwich, on Jan. 8th, and three women lost their lives. Dr. R. J. Mills (who had conducted the post-mortem examination) in his evidence before the coroner said that death was due to carbon monoxide poisoning, and must have happened before the burning, though the bodies were badly burned afterwards. One-fifth of the matches in the store caught fire, but this fraction was enough to cause immediate death. The coroner stated that he had taken the opinion of the Home Office upon the question whether the premises were to be deemed a factory within the Factory and Workshop Act or not. The answer was that the premises were not within the statutory provisions as to safety from fire. Nor, it appears, are matches to be deemed explosives within the Explosives Act. It is not surprising that the coroner's jury, when returning a verdict of "accidental death," added a rider unanimously recommending that goods of so dangerous a nature as matches should be stored under conditions which would better protect the workers' safety.

Penalties for Sale of Diseased Meat.

Public opinion will support the infliction of heavy sentences upon persons found guilty of the dangerous and disgusting practice of selling diseased meat for human food. In two prosecutions for this offence, recently recorded in the *Times*, the magistrates evidently took a serious view. Rose Hannah Gill, a butcher carrying on business in Bridgeman-street, Bolton, was fined various amounts totalling £180; inspectors gave evidence that they found 400 lb. of tuberculous meat on her premises in a cellar beneath the living-room, it being necessary to move furniture from the trap door giving access to the cellar. In another case, dealt with at the Marylebone police-court by Mr. Bingley, the stipendiary magistrate, a fine of £25 was imposed upon Eastmans, Ltd., of West Smithfield. In this case a joint of diseased meat attracted an inspector's attention. The defence was that it was part of a sheep's carcass from Australia and that it was most unlikely that the meat would be diseased. In passing sentence, Mr. Bingley criticised the inspector's failure to take immediate steps to discover what had happened to the rest of the carcass. The magistrate had little doubt that the other parts of the sheep had been sold to unsuspecting purchasers for human consumption. He commented on the fact that the maximum sentence (presumably under Section 47 of the Public Health (London) Act of 1891) was a fine of £50 or six months' imprisonment with or without hard labour, and he added that,

even if he wished to do so, he could not send a limited company to prison.

Charge of Cruelty to Animals: Successful Appeal.

If cats have to be destroyed, what is the most satisfactory method? Mr. R. J. Sargent, veterinary inspector to the Guildford Corporation, was fined £10 with £10 10s. costs last November for causing unnecessary suffering to two cats. It was stated at the police-court that he placed the cats in a lethal chamber containing chloroform for half an hour with a closed vent-hole, that when he took the cats afterwards to the destructor works they were still breathing, and that he then hit them with a sledge-hammer. A veterinary surgeon, giving evidence for the prosecution (conducted by the R.S.P.C.A.) said that he himself formerly kept the vent-hole of the lethal chamber closed when destroying cats, but that, having come to the conclusion that his former practice was cruel, he now kept the vent-hole open till the cats became unconscious. A cat, he said, should be kept in the chamber for at least an hour, and these two cats, if still alive, should have been killed by drowning, not by blows from a hammer. The defendant, who said he had destroyed about 600 cats in two years for a Guildford society, gave evidence that in his experience half an hour in the lethal chamber was sufficient. He was supported by Prof. Hobday, principal of the Royal Veterinary College, and other witnesses, and his appeal (to the Guildford Quarter Sessions) was allowed with costs.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Cancer Campaign in Ireland.

A MEETING to further the Cancer Campaign in Ireland was held at Belfast on Jan. 5th, being summoned by the Ulster Medical Society and the Ulster Branch of the British Medical Association. Dr. J. C. Rankin, President of the Ulster Medical Society, presided, and Mr. S. S. Pringle, of Dublin, outlined the objects of the Cancer Campaign in Ireland and the progress already attained. Among those who took part in the subsequent discussion were Dr. William Porter, Mr. Andrew Fullerton, the Marquis of Dufferin and Ava, Dr. Livingstone, Vice-Chancellor of the Queen's University of Belfast, Prof. R. J. Johnstone, M.P., Mr. Bryan Moore, Prof. J. A. Lindsay, Mr. A. B. Mitchell, and Dr. Leonard Kidd. The following resolutions were passed unanimously:—

1. That the National Cancer Campaign is worthy of support and that a Northern Ireland branch be established for the purpose of informing the public as to what is already known about cancer and of raising funds to assist in further investigation of the problems still unsolved.

2. That this meeting is of opinion that the plan of the National Cancer Campaign is the most suitable that can be adopted and is the most likely to lead to further progress, as under the present scheme those hospitals and laboratories which are already engaged in the treatment and investigation of cases of cancer will be assisted and encouraged to pursue their activities under a central direction, so that full use will be made of the services of their staffs of trained research workers, and of surgical, radiological, and biochemical experts.

3. That this meeting agrees with the decision of the National Cancer Campaign that it is not expedient to establish new special hospitals for the treatment and investigation of cancer, and that the results hoped for are more likely to be attained by development of the institutions already established.

A committee was appointed to carry out the objects of the meeting.

Maternity Accommodation in Belfast.

It has been recognised for some time that the existing accommodation for maternity work in Belfast is wholly inadequate. The present maternity hospital, which was opened in 1903, is a small institution and the pressure upon its accommodation has been constantly increasing. The need for better facilities has become urgent. There are reasons why the extension of the hospital on the present site would be difficult, and as an alternative it has been proposed that the Maternity Hospital should amalgamate with the Royal Victoria Hospital, which would erect a maternity block. This suggestion has been under consideration for several months, and has now been unanimously approved by the Corporation of the Royal Victoria Hospital and the Incorporated Society of the Maternity Hospital. It has been pointed out that this policy has many advantages. It is in line with the growing recognition of the desirability of all general voluntary hospitals including maternity work in their operations, as is the general practice in the United States and in Canada. Such association tends to efficiency and to economy. Maternity hospitals can hardly afford the expensive special departments which are now provided by all the great general hospitals, and collaboration of the staffs of the different departments is obviously highly desirable. The training of students and of nurses is facilitated by such an arrangement. Belfast has a large and flourishing medical school, but at present, owing to the lack of maternity accommodation in the city, many students have to seek their maternity training elsewhere. Economy is likewise secured by a joint administration, for small hospitals are necessarily more expensive to run than large hospitals. The present cost per bed per annum in the Royal Victoria Hospital is approximately £130, whereas the cost in the maternity hospital is approximately £170.

It is well known that the mortality in childbirth in the kingdom has been but little reduced in recent years and remains round about 4 deaths in 1000 deliveries. No one doubts that this mortality is largely preventable, or that its principal cause is the lack of adequate institutional treatment for maternity cases. The mortality in a well-equipped maternity hospital is very low, and in some cases almost negligible.

Steps have already been taken to effect the amalgamation of the maternity hospital with the Royal Victoria Hospital as promptly as possible. An appeal for £100,000 is being prepared, and the Duchess of Abercorn has consented to head the movement. The proposal is to erect a maternity block of 100 beds with facilities for extension.

Lunacy in the Irish Free State.

The report of the Inspector of Mental Hospitals in the Irish Free State for 1926 has recently been issued. The number of insane persons under care at the end of the year was 19,887, of whom 10,369 were males and 9518 females. There was an increase of 348 during the year, but the number was less by 249 than at the end of 1915. The number of deaths was 1037 and of discharges 1347, of whom 1051 were discharged as recovered. There were five deaths by suicide. The average cost per patient in the public mental hospitals was £49 1*s.* 4*d.* There are still 1994 insane patients in poor-law institutions.

The committee of the Grangegorman Mental Hospital—the asylum for the counties of Dublin and Louth—is occupied with the problem of providing additional accommodation. There are 200 more patients than in 1923, and the population of the asylum has virtually doubled in 30 years. It is stated that the Government will not allow any scheme of additional building to be undertaken until there has been time for consideration of the report of the Poor-Law Commission.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Sale of Carbolic Acid.

THE Board of Health announces that in future no carbolic acid may be retailed to any person except on a medical man's prescription. An exception is made for solutions of less than 5 per cent. The Board's action can hardly be called timely, for it should have been taken years ago when the news-

papers first pointed out how easy it was for would-be suicides to obtain the poison. Carbolic acid causes a death which is painful beyond ready description, but the victim usually finds this out too late. It is one of the cheapest and most readily available means of self-destruction and in this country is used in nearly one-third of all suicides being especially attractive to women. There is reason to believe that the new law will do more than drive the desperate to other means of self-destruction.

Action of Salicylates on the Kidneys.

Dr. Dumitriu Popesco has carefully examined the urine of a number of patients who were receiving salicylates for rheumatism and had not previously suffered from disease of the kidneys. His investigations make it clear, he says, that renal irritation may follow the use of these drugs, but he does not regard this as an important argument against their use as the damage is not serious. Dr. Avramescu, studying the same subject, has made somewhat different observations. Whilst pointing out that albumin and casts are found in large numbers of normal individuals, and are therefore present in many rheumatic patients before treatment begins, he states that when salicylates are exhibited the casts become more numerous, epithelial cells are abundant, and a desquamative catarrh of the entire urogenital tract is sometimes set up. He has even found coarse granular and waxy casts in some cases. An unusual feature of this form of renal inflammation is that it disappears even if administration of salicylates in large doses is continued. Clinical symptoms of nephritis never appear, and it seems that if the patient is already suffering from this disease in a chronic form the antirheumatic drugs will quickly cause a fall in the quantity of albumin excreted. The above observations, therefore, appear to have a theoretical rather than a practical value.

Total Extirpation of the Larynx for Carcinoma.

Dr. Paul Steiner has recently reported the following case to the Cluj Medical Society:—

An agricultural labourer, aged 55, had been hoarse for some months and had lost 21 lb. in weight. Examination with the laryngoscope showed a new growth on the right vocal cord, which in some places had become cicatrised and nodular. At a subsequent examination Dr. Steiner excised a small piece of the growth intralaryngeally, and under the microscope it was found to be carcinomatous. No infiltrated glands were present in the neck and the larynx was removed on Nov. 30th, 1927, under deep narcosis without previous tracheotomy, a cannula being used only after the operation was over. As soon as the wound had healed an artificial larynx, as modified by Bruns, was brought into use, and this is still worn by the patient, who speaks quite intelligibly and can make himself heard in a large room.

It was found that the growth occupied the whole left half of the larynx, extending over the midline in front, and downwards as far as the cricoid cartilage. Judging from these appearances the patient could be cured only by total excision of his larynx, and as Dr. Steiner points out, his experience justifies the statement that preliminary tracheotomy is not always required in operations of this kind.

The Care of Old Age.

In the course of a popular lecture delivered here some time ago Dr. Burghardt dealt with the means that may be taken to preserve activity of mind and body in the aged. It is universally admitted, he said, that after middle life the amount of food taken should diminish, and the aim should be to decrease the consumption of the structure-forming materials of diet, though they should not be dispensed with entirely. Relatively little should be taken of the stimulating elements of food which are used to make it attractive, and, in brief, we should eat no more than the perfectly normal appetite craves for, and as little as possible of those things which are merely agreeable. As the period of old age approaches the regimen should be definitely simplified and meals should always be taken with deliberation. Bread, milk, and fruit are the most beneficial foods at this period of life. The tendency of old people to stay indoors should be discouraged, and too much heavy clothing should not be worn. The idea that the old should live as much like vegetables as possible, taking no exercise whatever, is erroneous and makes for premature decay. The disinclination to move and make efforts may be rather the result of under-oxygenation, of habit, or of what may almost be called senile laziness, than of an instinctive impulse towards functional economy. The real remedy for stiffness, digestive troubles, and the other discomforts and disturbances of old age is healthy exercise and a suitable diet.

The Services.

COMMISSIONS IN THE INDIAN MEDICAL SERVICE.

A CERTAIN number of appointments will shortly be made for permanent commissions. Well-qualified men of European descent, under 32 years of age, who wish to enter the Service should apply to the Under Secretary of State for India, Military Department, India Office, London, S.W. 1. The selected candidates will be required to attend a course of instruction in this country, commencing not later than Feb. 16th, prior to sailing for India in the early autumn. An announcement appears in our advertisement columns.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. F. E. Anley is placed on the Retd. List with the rank of Surg. Capt.

Surg. Comdr. A. G. Malcolm to *President* for course at R.A.F. Medical Officers' School of Instruction.

Surg. Lt.-Comdr. A. H. Harkins to *Delhi*.

Surg. Lt. F. W. Besley to *Broke*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. R. Sylvester-Bradley, half-pay list, late R.A.M.C., retires on ret. pay on account of ill-health.

Capt. B. L. Davis to be Maj. (Prov.).

TERRITORIAL ARMY.

Capt. G. L. Pillans, late R.A.M.C., to be Lt., and reinquishes the rank of Capt.

INDIAN MEDICAL SERVICE.

The undermentioned officers relinquish their temp. commns.: Temp. Capts. Abinash Krishna Sen and Krishna Das Mukharji (and retain their rank), and Temp. Lt. Venkatachari Srinivasan.

ROYAL AIR FORCE.

Flying Officer J. D'Isney Rear is promoted to the rank of Flight Lt.

DEATHS IN THE SERVICES.

Lieut.-Colonel Robert Tilbury Brown, C.M.G., late R.A.M.C., who died on Jan. 21st, aged 54, was educated at the King's School, Rochester, and at Guy's Hospital. At Durham University he graduated in medicine and surgery in 1899 and proceeded to the M.D. degree in 1904, when he obtained the gold medal. After a few years of general practice he joined the R.A.M.C. in 1900 and served successively as specialist in charge of the laboratory at Lucknow, and sanitary officer of the Eastern Command and Burma Division. In 1914 he joined the forces in East Africa as D.A.D.M.S. (San.), G.H.Q., and O.C. Indian Sanitary Section. In 1916 he was appointed D.A.D.M.S., G.H.Q., and in 1917 A.D.M.S. He was mentioned in dispatches four times, created C.M.G., and awarded the D.S.O. Lieut.-Colonel Brown was O.C. Royal Herbert Hospital, Woolwich, from 1919 to 1921, senior M.O. Ceylon Command from 1922 to 1924, and senior M.O. Bordon, from 1925 to 1926, when he retired. He was a Chevalier of the Order of Leopold. Lieut.-Colonel Brown married Pauline, daughter of Mr. F. Normandy, barrister-at-law.

LIVERPOOL HOSPITAL FOR CANCER AND SKIN DISEASES.—This institution is appealing for £100,000 for its reorganisation and the provision of a radium centre and a fully equipped X ray department. It is proposed, among other things, to set aside beds for treatment by radium.

Correspondence.

"Audi alteram partem."

FATALITY-RATES OF SMALL-POX IN THE VACCINATED AND UNVACCINATED.

To the Editor of THE LANCET.

SIR,—Dr. Garrow has drawn attention to the greater relative number of deaths in the vaccinated-over-15 suffering from "mild" small-pox. Many years ago I took out the following figures for the Manchester epidemic of true small-pox for 1903–04.

—	No. of cases.	Deaths.	Fatality per cent.	True hæmorrhagic cases.	Percentage.
Unvaccinated ..	52	10	19·2	1	1·9
Stated to have been vaccinated.					
No cicatrix ..	35	6	17·1	1	2·9 } 4
One mark ..	65	7	10·8	3	4·6 }
More than one mark	362	7	1·9	2	0·6

So far as these figures go they show clearly for true small-pox that the case-mortality is lower the better the vaccination, and they also indicate that doubtful and poor vaccinations (one mark) give a larger percentage of hæmorrhagic cases. My apology for attaching any significance to these small figures is that hæmorrhagic cases are so few, even in a long series.

I assume that only the debilitated die from "mild small-pox." May it not be that the fatal result is due to a smarter initial reaction in the vaccinated and that hæmorrhagic small-pox is due to a similar cause in the inefficiently vaccinated?

I think that it is possible that the further inquiry for which Dr. Garrow presses and which might lead to a better understanding of reaction to infection may actually show (1) that long past vaccination may actually increase the chances of death resulting in the debilitated suffering from mild small-pox, and (2) that inefficient long past vaccination may increase the chances of a hæmorrhagic attack in true small-pox. The inquiry would also emphasise the importance of *efficient* vaccination which modifies the severity of the disease throughout life.

I am, Sir, yours faithfully,

DUNCAN FORBES,
Jan. 20th, 1928. Medical Officer of Health, Brighton.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to a slight error in the tabular statement in my letter of Jan. 14th. The 94 cases in the year 1926 whose vaccination state is classified as doubtful are not included in the figure 3116 as stated in the footnote to the table. This means that the total number of cases for the four years is 10,925 instead of 11,019. This slip does not affect the fatality figures in the vaccinated and unvaccinated.

I am, Sir, yours faithfully,

R. P. GARROW.
Jan. 20th, 1928. Medical Officer of Health, Chesterfield.

THE PRESENT POSITION OF THE VOLUNTARY HOSPITAL.

To the Editor of THE LANCET.

SIR,—Dr. Graham Little does not improve his position. Out of nearly two columns of irrelevancies about his German professor, &c., not in the best of taste, a few things emerge.

He shows that his depreciation of other workers in order to exalt his own circle is not, as one supposed, merely an ignorant habit of mind, but a deliberately chosen line. In the articles in the *Times* to which he refers, he allowed himself to reflect, in a lay journal where he was protected from contradiction, not only upon the abilities, which I am not concerned to discuss, but also, which is unforgiveable, upon the standards of his medical brethren.

Dr. Little quotes without contradiction the statement that "the voluntary hospitals only do 20 per cent. of the work that comes to them," thus admitting one of the most serious defects alleged against the system. He has only two remedies. One is expansion of the voluntary hospitals; whence does he think the extra 80 per cent. of money is to come? The other is to take over those supposed hundreds of empty poor-law beds. In London, at any rate, they do not exist, as he would know well if he knew anything about the subject.

His contention that the voluntary hospitals have become more popular "as compared with other institutions" is palpably absurd, for it is common knowledge, and is indeed the origin of this present discussion, that crowds of patients now gladly enter poor-law hospitals who would never have consented to do so 20 years ago, and that the latter are far more comparable with the voluntary hospitals than was ever the case before.

Is not Dr. Little a politician; or, if he considers the term abusive, is he not, at any rate, a Member of Parliament? How can he really hope that publicly elected bodies would resign the control of their hospitals to a voluntary management? The improbability is obvious, but would take too long to discuss now.

In conclusion, I should like to say that criticism of Dr. Little does not necessarily imply opposition to the voluntary system or to some scheme of coöperation. But the approach will have to be very different from Dr. Little's.—I am, Sir, yours faithfully,

J. C. MUIR,
Medical Superintendent, Whipps Cross Hospital
Jan. 23rd, 1928. (West Ham Board of Guardians).

THE FUTURE OF MEDICAL PRACTICE.

To the Editor of THE LANCET.

SIR,—I have read with much interest Mr. Somerville Hastings's article (in your issue of Jan. 14th, p. 67) on the future of medical practice in England, and I should like to make a few observations upon it. So far as the public health service is concerned, it is doing a splendid work for the nation's health, and has undoubtedly come to stay. The same also applies to the venereal disease centres. But it seems to me that other clinics (e.g., tonsil and adenoid, dental, maternity, child welfare, &c.) are becoming increasingly unpopular both with the patients and the practitioners. So also are the poor-law hospitals.

The reasons for this unpopularity are not very difficult to trace, because the general practitioner who has charge of the patient after clinic treatment hears the patient's ideas, and is able personally to observe the results of such treatment. I would suggest that this lack of confidence is due to one or more of the following causes:—

1. Bad or incomplete work is done in some clinics. It is sometimes difficult for the practitioners to account for this to the patients without casting reflections upon the medical officer of the clinic concerned.

2. In event of any complication arising as the result of operative work done in a clinic, the patients have to be taken to their family doctor. The actual operator is therefore not available to carry out after-treatment.

3. Attendance at clinics often involves long waits, sometimes in the presence of verminous or even infectious children.

4. Compulsory medical examinations at school sometimes lead to expressions of opinion by the school doctor which differ from opinions previously given by the family practitioner. These occasional conflicts of opinion do much towards weakening faith in school doctors, because the average mother has great faith in her private doctor's opinion, partly because she pays for it, and partly because she considers that "her own doctor *understands* the case."

5. In the case of some poor-law hospitals the principal objection is the exceedingly rude and discourteous way in

which patients (yes, and sometimes practitioners too) are treated by the medical staff. There is also the objection which Mr. Somerville Hastings rightly points out, that no consideration is taken of the practitioner, in that no information is afforded him as to diagnosis and treatment of his patients. These, and other facts, all tend to make institutional centres more unpopular, and their future very uncertain. Many a mother brings her child to me to enucleate its tonsils or to "give it an overhaul" rather than to go to the provided centres.

The truth of the matter is that the general practitioner of to-day is a more all-round efficient man than he was, say, 35 years ago, and this fact alone contributes largely to the improved conditions *re* infant mortality, &c. Public provision *helps* towards this no doubt, but it must be borne in mind that only the poorer people take their children to these centres, whereas infant mortality has improved in the case of the well-to-do as well. This can only be due to the increased efficiency of the family practitioner.

I feel that many practitioners will agree with me that these clinics, &c., are far from popular with many people, and that the chief reason why a large number attend them is because they obtain cod-liver oil, patent milk foods, &c., free, or at a nominal price. It is, in fact, due to the all-too prevalent spirit of the times—the desire to get something for nothing.

I am, Sir, yours faithfully,
J. L. CYRIL DOYLE, M.R.C.S., L.R.C.P.

Harley-street, Jan. 24th, 1928.

MEMORIAL TO DR. JOHN THOMSON.

To the Editor of THE LANCET.

SIR,—Several of the friends and old pupils of the late Dr. John Thomson are anxious to establish some permanent memorial of his great services to pædiatrics in this country and to perpetuate the memory of a very lovable personality. We have been asked to serve as a committee to give effect to this object, and those who are in sympathy with it are invited to send subscriptions to Dr. C. McNeil (44, Heriot-row, Edinburgh) or to Dr. Robert Hutchison (32, Devonshire-place, London, W. 1), who are acting as treasurers. The form of the memorial has not yet been determined and must depend to some extent upon the amount obtained in response to this appeal.—We are, Sir, yours faithfully,

THOS. BARLOW, ROBT. HUTCHISON,
LEONARD FINDLAY, CHARLES MCNEIL,
GEO. F. STILL.

Jan. 18th, 1928.

THE DISPOSITION OF MEDICAL LIBRARIES.

To the Editor of THE LANCET.

SIR,—Your late assistant editor, Dr. H. P. Cholmeley, left me his personal effects, including his books, many of them dealing with medical history. Of these Mr. H. E. Powell, the librarian of the Royal Society of Medicine, made a selection which he wanted for the Society's library, taking 21 works which they had not got, and saying of others that they would "be very useful as second copies, being all interesting works."

There must be an increasing difficulty in securing old books for medical libraries in this country now, on account of the demand in America; within a few days of the announcement of Dr. Cholmeley's death I had an offer to purchase the whole of his library en bloc for an American buyer. This experience has led me to believe that it might be worth while to appeal to your readers to see that our own great libraries, and not only medical libraries, should have a chance of acquiring medical books belonging to deceased doctors.

Even the largest libraries have gaps. For instance, in 1905 I gave about 12 volumes to the Bodleian, mostly eighteenth and seventeenth century historical monographs, none of which they had; and in 1912 I gave collection of foreign works on medico-social subjects the Cambridge University Library. Again, the itish Museum now has three books which I acquired for practically nothing. One was a volume of Theology printed in Lyons which had belonged to James I. and bore his arms and cypher on the binding; one was the suppressed list of George IV.'s debts, published by William Cobbett; and the third was the last known copy of the Official List of Coaches running out of London in 1832. Such finds may lie ready to the hand of the country doctor. King James's volume was not known to exist outside the Bibliothèque Nationale in Paris.—I am, Sir, yours faithfully,

A. MAUDE.

Forest Edge, Forest Row, Sussex, Jan. 18th, 1928.

MERCUROCHROME INTRAVENOUSLY.

To the Editor of THE LANCET.

SIR,—Two injections prove nothing, but their results may be of sufficient interest to communicate.

CASE 1.—An elderly Brahman with necrosis of the left half of the mandible. He was having frequent rigors and was obviously very ill. An incision over the mandible helped to evacuate the pus and at the same time I gave him 20 c.cm. of 1 per cent. mercurochrome intravenously. The rigors stopped and his condition rapidly improved, so that a few days later I was able to remove the necrotic half of the mandible, after which he made an uninterrupted recovery.

CASE 2.—A large and otherwise healthy European with gonorrhœa and prostatitis of a fortnight's duration. The injection of 20 c.cm. 1 per cent. mercurochrome intravenously was followed in six hours by a severe rigor, the temperature rising to 105° F. and the passage of mercurochrome-stained (i.e., crimson) urine. The moral effect on the patient was terrific, but the therapeutic effect was doubtful.

I am, Sir, yours faithfully,
H. WILLIAMSON,
Capt., I.M.S.

Quetta, India, Jan. 4th, 1928.

"THE CONDUCT OF MEDICAL PRACTICE."

To the Editor of THE LANCET.

SIR,—I have just read this book; it is a book of revelations. Who of the grey-headed amongst us but may wonder as to his ignorance of the many roads open to the young practitioner? No such guide as "The Conduct of Medical Practice" has been available until to-day.

The dean of a medical school is now in close touch with the students in a way that would have astonished and much benefited my generation. I do indeed hope that every dean will study the book and see to it that a reference copy is in the school library wherewith to forestall the chronic heartburn of undigested opportunity.

More than a passing acquaintance with foreign lands encourages me to suggest that a future edition might touch on the facilities and obstacles to general practice in countries other than Great Britain.

I am, Sir, yours faithfully,
FRANCIS POTT.

Florence, Jan. 18th, 1928.

OPERATIONS UPON THE ENLARGED PROSTATE.

To the Editor of THE LANCET.

SIR,—Having had a long and varied experience as an anæsthetist for these operations I think my evidence in support of Mr. Harold Edwards's statements (THE LANCET, Jan. 14th, p. 77) may be worth contributing. These are that exposure to view of the prostatic cavity does not unduly prolong the operation; that shock does not follow the insertion of the bladder retractor; that a varying degree of shock is always associated with prostatectomy, however performed, and is due entirely to the enucleation of the prostate from its bed. As general rules these are in accordance with my observations. In regard to the last, it may be remarked that Mr. Tyrrell Gray and Dr. Parsons showed some years ago that enucleation tends (like dilatation of the sphincter ani) to act as a powerful stimulus, and to be accompanied by a

sudden and marked rise of blood pressure. If enucleation is easy, the patient in fair health, and the anæsthesia or analgesia adequate, effects on the respiration and circulation may be unimportant; otherwise they may fail to respond, and shock in its clinical sense results.

I would add that shock due to stimulation of peripheral nerves must (as always in operations) be carefully distinguished from collapse due to other causes, such as chloroform, intrathecal injection, and emotion in conscious patients.

I am, Sir, yours faithfully,

London, N.W., Jan. 19th, 1928. J. D. MORTIMER.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—Presumably Prof. MacLean's duties afford him small opportunity of personal or intellectual contact with the general practitioner. Otherwise he could scarcely do him the injustice of supposing that he prefers to receive his information unbacked by references to the literature and in the form of confident assertion rather than ordered evidence.

In the third paragraph of his paper the following sentence occurs: "We are now satisfied that the results obtained by this method are better than any that have hitherto been described, and that recurrences are extremely rare." Now it would manifestly have been quite impossible in the short space of five years adequately to test all the other methods that have hitherto been described. Furthermore, methods so closely similar to his own as to be identical in action have long been in use, have already found their place in reputable text-books, have been discussed in the journals and at medical societies, and have been shown by others to expedite the healing of ulcers in the way which he now discovers.

Prof. MacLean and his colleagues claim—and no one with experience of the medical treatment of ulcer would question it—that they have cases treated four or five years ago still showing no evidence of recurrence, but they give no indication as to what proportion of cases treated four or five years ago remain healed. This is the kind of information which the thinking practitioner requires and has a right to expect from so authoritative a source as a hospital unit.

My criticism of the claim to "cure" has found unexpected justification, for the undiscerning daily press is already welcoming alkaline treatment as though it were something new and wonderful. In common with Prof. MacLean and many other colleagues I am anxious to see the possibilities of medical treatment in gastric ulcer more widely appreciated in the profession, but for the credit of medicine let us endeavour to ensure that the case is presented fairly, scientifically, and without extravagance. I am, Sir, yours faithfully,

Wimpole-street, W., Jan. 23rd, 1928. J. A. RYLE.

To the Editor of THE LANCET.

SIR,—May we reply very briefly to the letter of Prof. Hugh MacLæan and his co-workers in your issue of Jan. 21st? The main purpose of our previous letter was to repudiate the suggestion, inherent in the original article of Prof. MacLean and Drs. Jones and Fildes, that the treatment they outlined was in any essential different from the Sippy treatment, which had long been in extensive use, prior to the date when they state that their investigations were begun. Particularly in view of the echoes which their article has provoked in the lay press, we are happy to note that they now disclaim originality for the method. With regard to our other criticisms and the excellent remarks embodied in the letter of Dr. J. A. Ryle, we are satisfied that time will support our views.

We are, Sir, yours faithfully,

T. IZOD BENNETT.

London, W., Jan 23rd, 1928. ALAN MONCRIEFF.

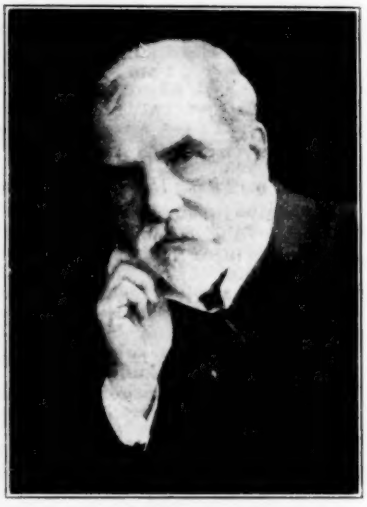
Obituary.

SIR DYCE DUCKWORTH, BART., M.D. EDIN.,

CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

WE much regret to record the death, in the eighty-eighth year of his age, of Sir Dyce Duckworth, consulting physician to St. Bartholomew's Hospital, the Seamen's Hospital, and the Italian Hospital, and for many years well known in the consulting circles of London and elsewhere.

Sir Dyce Duckworth was born in November, 1840, the son of Robinson Duckworth, of Liverpool, by his wife, the daughter of Dr. William Nicol, of Stonehaven. He received his early education at the Royal Institution School, Liverpool, and the University of Edinburgh, completing his medical training at St. Bartholomew's Hospital, at the instance of Sir James Paget. He took the diploma of M.R.C.S. in 1862 and graduated at Edinburgh in Medicine in 1863 with the gold medal for medicine, and entered the Navy in the following year as assistant surgeon, but resigned his commission immediately on appointment as medical tutor to St. Bartholomew's Hospital Medical School. He was elected assistant physician to the hospital in 1868, simultaneously with Sir William Church, and F.R.C.P. Lond. in 1870. In 1883 he became full physician, a position which he held for 22 years, retiring in 1905 on attaining the age-limit, when he was appointed consulting physician. Thus he remained on the staff, and in the service of the hospital, either with or without wards, for no less than 40 years.



SIR DYCE DUCKWORTH.

Photograph by Elliott & Fry.

Words from two colleagues show the high appreciation in which he was held by the staff at St. Bartholomew's and its reasons. Dr. James Calvert writes: "Although 23 years have gone since Sir Dyce resigned his office of physician to St. Bartholomew's, until quite recently he was often at the hospital: thus he has never faded from the picture there and his memory is still green. Everyone there will mourn for him and feel sad when they think that never again will they see this very perfect gentleman walk into the square. He just loved the place; in its service he had passed the best years of his most useful and distinguished life. In 1886–87 I was his house physician—a very happy year for which I must always hold him in grateful remembrance. Sir Dyce was a very good doctor—some great physicians are not good doctors—he was an admirable clinician with an unusual knowledge of drugs and a great belief in their usefulness. No doubt he was somewhat conservative. I think he always rather mistrusted the laboratory, for I remember his invariable advice to the young physician was 'Stick to the bedside.' This advice was considered archaic by many even in those r-off days, but in my opinion it is very sound, specially at the present time. Some people have thought that Sir Dyce was 'peppery'; well, he was

on some subjects, but this only made him the more attractive, while he was too kind-hearted to be really intolerant. He was devoted to his ward work, very capable, very careful, and above everything else an enduring example to all who worked under him of the conscientious discharge of the duty he had undertaken both to his patients and to his pupils. He examined each patient once a week as thoroughly as their condition allowed, and he required a corresponding examination and report from the clinical clerk concerned. Thus, at the end of their three months' clerking his clerks, as the result of much practice, had a very fair knowledge of physical signs. And physical signs, on the medical side, appear to me still to be the most important part of a student's training in hospital. His visits to the wards were long and arduous to all concerned—it could not be otherwise considering the amount of work he put into them. On a recent occasion I remember he said to me: 'Character is everything.' Well, I admire and revere Sir Dyce Duckworth's character."

Another colleague, of similar standing on the staff, writes: "Sir Dyce Duckworth was a good example of the old style of physician. He began when clinical observation and morbid anatomy were almost the only methods of study and when physicians were seldom equipped with the ophthalmoscope and the laryngoscope. He had a good knowledge of skin diseases, but he was interested in the studies of general nervous disorders by which Charcot made such an impression in the middle of the last century; but the discoveries of the functions and pathology of the spinal cord and nerves came rather too late to attract his chief attention, which by that time was fixed on the general diseases, such as gout and rheumatism, of which he was a diligent student, and of the diseases of the heart, lungs, and abdominal viscera. Of these his knowledge was great, and his opinion in such cases was very valuable. He took enormous pains over his hospital work, in which he delighted and visited his wards more often, and in longer visits, than any other physician. His round, which began at half past one, frequently lasted till close upon five o'clock, and a ribald critic once declared that all his house physicians were afflicted with varicose veins. But he was a lesson to us all in conscientious discharge of duty and for his real delight in clinical study and practice. For he was a great practitioner as well as a great student. He had a firm faith in drugs, and he was a far better prescriber than most physicians nowadays are. He sometimes said that those who disbelieved in drugs did not know how to use them. It is not certain that he was wrong, though the fashion was, and is, against him. For the rest he was a cultivated man, a good French scholar, and a most honourable gentleman. He had a great idea of the dignity of his profession, and of the College of Physicians, and he was sometimes a little pompous. But there were few who did not like him, and none who did not respect him.: 'He nothing common did or mean.'"

Retirement from daily association with St. Bartholomew's Hospital implied with Duckworth no retirement from active work. In 1907 he was elected physician to the Seamen's Hospital, Greenwich, and in 1910 to that of the Italian Hospital, so that it is not surprising, having a wealth of clinical material under his eye for so long a period, that he became well known as a consultant not only in the particular rheumatic and gouty affections with which his name is chiefly associated, but in medical cases generally, where he was found sound in diagnosis and resourceful in treatment.

Duckworth's connexion with the Royal College of Physicians of London was a very long and intimate one. He was a Fellow of the College for 58 years and served on the Council and on the Censors Board, being Senior Censor in 1903. He was early singled out by the College for posts of responsibility, being appointed treasurer in 1884 and representative of the College on the General Medical Council in 1886. The latter post he held for 15 years, while at the time of his death he was emeritus treasurer. In 1896 he delivered the Lumleian lectures on "Sequels of Diseases"; and in 1898 he was Harveian Orator, taking as his subject "Character and Judgment in Medicine." His two deliverances form a close reflection of his personal faith and ideals; they display his high conception of medical ideals, and his trust in authority, human as well as divine, as necessary for right conduct.

On the erection of a Conjoint Board of Examinations under the joint management of the Royal Colleges Duckworth became one of the managers and played an active part in the reforms in education which followed this wise amalgamation of forces. He was the representative of his College, also, as a governor of the University of Liverpool. His services as an examiner were requested by the Universities of Edinburgh, Durham, and Victoria, by the Royal College of Physicians of London, and by the Navy, while he was a medical referee to the Treasury. At different times he received many professional honours, being an hon. M.D. of Cincinnati and the Royal University of Ireland, a member of Convocation of Queen's University, Belfast, and an hon. F.R.C.P. Ireland. He was also LL.D. Edin. and a Knight of Justice of the Order of St. John of Jerusalem. He was knighted in 1886 and shortly afterwards appointed honorary physician to the Prince of Wales, afterwards King Edward VII., and in 1909 was created a baronet. He was a past president of the Clinical Society and a corresponding member of the Académie de Médecine and of the Société Thérapeutique, of Paris, appropriate honours, for he was a fluent speaker of French.

Sir Dyce Duckworth was twice married, first to Annie, widow of the late Mr. John Smith, of Mickleham Hall, Dorking, and secondly to Ada, daughter of Mr. G. A. Fuller, of the Rookery, Dorking, and leaves by his first wife a son, Mr. E. Dyce Duckworth, I.C.S., who succeeds to the baronetcy.

BASIL THORN LANG, B.CHIR. CAMB., F.R.C.S.

Basil Thorn Lang was the only son of Mr. William Lang, consulting surgeon to the Royal London Ophthalmic Hospital and consulting ophthalmic surgeon to the Middlesex Hospital. He was educated at Abbotsholme and Trinity College, Cambridge, and graduated in 1902 with first-class honours in the Natural Science Tripos, completing his general medical education at St. Bartholomew's Hospital. Following in the footsteps of his father, he specialised at once in ophthalmology, working as clinical assistant at "Moorfields" and first as clinical clerk and later as ophthalmic house surgeon at St. Bartholomew's. In order to gain operative experience he went to India for six months and studied under Colonel Henry Smith at Jullundur and under Colonel R. H. Elliot at Madras, thus becoming a dexterous operator.

MR. BASIL LANG.

Photograph by Stuart.

Colonel Smith writes: "I came to know Mr. Basil Lang as a guest in my house and at my hospital

at Amritsar. During that time we discussed a wide range of things scientific and others, and I then came to the conclusion, since confirmed, that he was a man of exceptional ability with a wealth of information and with fearless moral courage. In difficult cases of refraction he had very few equals. Cases came to me often as a sort of last hope, each with a pocket full of glasses and diagnoses down to and including the early stage of cataract. I am not a refractionist and I sent the patients on to Mr. Lang. In every case his first glasses acted as a charm, and I received letters of thanks from the patients saying that they had been relieved of all their worries. In other fields he was equally brilliant, and the ophthalmic section of our profession has suffered a great loss in his death."

At the outset of the war he at once joined the R.A.M.C. and served practically continuously in France throughout the hostilities. At first he devoted his energies to X ray work, and by means of his inventive gifts, combined with his technical knowledge, he devised and built in France the first mobile X ray unit for use in the front areas; when the King met with his serious accident, Lang and his unit were immediately sent for to X ray His Majesty. Shortly after a serious illness led to his being invalided home for several weeks, and from this he probably never completely recovered; but on returning to duty he became ophthalmic specialist and did valuable work both at Rouen and Etaples. An enthusiastic photographer, he did some excellent colour plates of trench feet, and his X ray work is well described in the following note from a military co-worker:—

G. T. L. writes: "Early in 1915 I found Basil Lang at Rouen, busy as X ray specialist to No. 8 General Hospital. Although 'eyes' were his specialty, he was an adept at X ray work, and his department was extraordinarily well run and full of ingenious devices and self-made improvements on the regulation X ray apparatus. He was a very great help to me in the rapid X ray localisation of foreign bodies in the eye—my unit took in all the eye wounds. His spare time was spent in making friends with French doctors and civilians, always with a view to devising some new apparatus or improving an old one, not only for radiological, but for surgical and ophthalmic use as well. Often one would meet him emerging from some obscure back street with a grin on his face, and his great voice would boom out and tell you how he had just unearthed and befriended a workman who would make for him some special instrument or apparatus. He had made a wonderful series of colour photographs of trench feet, for he had quickly realised the need of X rays nearer the fighting line. With characteristic energy he raised funds, designed, and had made a travelling, self-contained X ray lorry; this entailed a vast amount of work, first to obtain official sanction, and then to get the unit made. Many visits to Paris were necessary for the special electrical apparatus, but in the autumn Lang went up the line in charge of No. 1 mobile X ray unit, which he used later to examine the King after his fall from a horse. His carrying out of the idea was original and, as events proved, extremely useful; it was adopted later by the War Office, though the pattern was not exactly copied, as French apparatus had been used. It was at times such as this that one realised the extraordinary mental and physical energy of Basil Lang; he was always striving after something better."

After the war he was appointed assistant surgeon to the Western Ophthalmic Hospital and Lang Research Scholar, posts which he held till his election to the staff of the Royal London Ophthalmic Hospital in 1920. No summary of Lang's medical achievements would give a clue to the versatility or brightness of his intellectual activities. Having a clear and broad grasp of the principles of physics as well as a gift for constructive detail, he understood the diverse practical working of motor-cars, the telephone, the wireless, as well as the various optical instruments. Consequently he welcomed enthusiastically any clever invention—and he himself devised many, several of which he patented, one of the most notable being a long distance range-finder. He had original methods both of treatment and operating, and showed considerable resource. He invented several ingenious ophthalmic instruments, chiefly various forms of perimeter and an operating lamp, and he delighted in any new type of apparatus which extended to the ophthalmic surgeon further powers of observation. This is well shown in his writings—in his book, the Routine Examination of the Eye (an amplified edition of his father's excellent handbook—the Methodical Examination of the Eye) and in his papers on perimetry and scotometry; all these show his capacity for minute observation and his originality of thought. With such a versatile and active mind it was felt generally that he was capable of work of far-reaching value, and the cutting short of his life in its prime is, from a professional point of view, a tragedy.

An intimate friend writes: "His outstanding feature was his ebullient vitality and quickness of mind, combined with a good nature which, when roused, could be genuinely quixotic. A large number of friends, who fell under the spell of his refreshing vitality, will feel his loss deeply, while his cheery, forgiving nature—proof against opposition or rebuff—will have saved him from having made a single enemy." And from Mr. Basil Lang's chief assistant at Moorfields we have received the following tribute, endorsed by his house surgeons: "It is difficult to imagine a more refreshing and a more stimulating chief than Mr. Basil Lang. His exceptional knowledge of physics combined with an unconventional good humour and a cheerful readiness to give an opinion, always apposite, which would help to solve a problem or throw light upon a controversy, made him a teacher of great value and a companion of exceptional charm. Every question of interest which came under discussion had been considered by him from a viewpoint just a little different from that of others, and he would offer a reasoned argument built on sound knowledge. In the operating theatre his personality found expression in his generosity to the house surgeons, in the instruments he used, in the operations he performed, and in the views and ideas he discussed between cases. He had a profound respect for the evils consequent upon having capsule in the wound of his cataracts and almost invariably did simple extractions followed by an anterior chamber wash-out. For glaucoma he preferred Lagrange's operation, or a modification of it, to trephining, and he frequently did Herbert's sclerotomy. A picturesque feature of his work was his use of green towels to avoid distracting glare. He was an operator of real skill, but it is probable that his greatest pleasure was in the examination and treatment of his out-patients. We who, either 'upstairs or down,' worked under him at Moorfields, feel that by his death we have lost not only a friend but a rare and valued source of knowledge and new ideas."

Basil Lang's activities were much impaired for some two years before his death with arthritis, which laid him up for weeks at a time; yet he bore his disabilities with never a complaint and with the utmost pluck, while every form of new treatment was tried with astonishing optimism.

He was only married 11 months ago, and all who knew him will offer his widow, his father, and sister their deep sympathy in the irreparable loss they have sustained.

THOMAS TOMBLESON BRUNYATE, M.D. Oxf.

It is with regret that we record the death of Dr. T. T. Brunyate, which occurred on Jan. 1st, at Chaucer's House, Woodstock, in the 61st year of his age.

Brunyate was educated privately and at Oxford, where he was a scholar at Christ Church, having a special aptitude for mathematics, which was a family

trait. From Oxford he won an entrance scholarship at St. Mary's Hospital in natural science, and was eventually house physician in this hospital. He took the M.B. and B.Ch. Oxf. in 1892, and the M.D. degree in 1894. In addition to attaining academic distinction he was a cultivated man in the widest sense and one of outstanding ability; he was obviously fitted for some of the higher branches of his profession, and yet he deliberately chose the career of the country doctor, a choice which neither he nor any concerned had ever any reason to regret. He practised first in Rochester, and became physician to St. Bartholomew's Hospital in that city. Then, some 20 years ago, he removed to Woodstock, attracted by its nearness to his University. There he continued to the end, showing by his life the full possibilities of his calling and its adequate scope for applying scientific attainment with the utmost human interest. He was an ardent lover of Nature and of the simple things of life. He was a good oar in his day, and a good golfer and tennis player to the end, and also a good teacher of these as well as of mathematics, as the prowess of his children in several directions has made clear. (Take tennis as an instance, his two daughters have representative colours both for the University and for the County of Oxford.) He always took a keen interest in his University and that of his children, and participated in the post-graduate work connected with the Radcliffe Infirmary; one son and one daughter are already engaged in the study of medicine. A colleague writes: "Brunyate was a man of high integrity which, added to his ability and humanity, gained him the respect and admiration of the whole neighbourhood in which he lived and worked. To his widow and children the utmost sympathy will be extended with the assurance that the works of her husband's fine life are even now following him and will continue to do so."

His death called forth an extraordinary manifestation of respect and affection from a wide area, including, but far outreaching, his own home district.

THEOBALD ADRIAN PALM, M.D. EDIN.

To Dr. Adrian Palm, whose death has occurred at Aylesford, belongs the credit of having set out as long ago as 1890 the view that rickets is due to deprivation of sunlight. His communication to the *Practitioner* in that year on the Geographical Distribution and Ætiology of Rickets unfortunately attracted little notice, and his suggestion was only recalled when the investigations of other workers had established the relation which he postulated. Born at Colombo nearly 80 years ago, he was the son and grandson of Presbyterian missionaries. He graduated in arts at the University of Edinburgh in 1867 and in medicine six years later, and after a short spell as resident medical officer to the Cowgate Dispensary he followed the family tradition by going out to Japan, for the Edinburgh Medical Missionary Society, to the Niigata Mission Hospital. There he remained ten years and made many observations on the customs and diseases of the population, some being contained in a work entitled "Kakke: A Study of Disease in Japan," and others in reports to English and Scottish medical journals. Returning to this country he took up general practice at Wigton and was appointed medical officer of health for the Wigton Urban District. Twenty-three years ago Dr. Palm moved to Aylesford in Kent, where he lived until his death, and in 1924, in recognition of his early observations on rickets, he was elected president of the newly formed Sunlight League. Whilst in Japan he married Miss Collas, of Jersey, who was also engaged in missionary work.

NORTH STAFFORDSHIRE ROYAL INFIRMARY.—During the past year workmen's contributions to the Stoke-on-Trent Hospital amounted to £27,681, which is £600 above the "record" achieved in 1925.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 14TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 398 (last week 275); scarlet fever, 1733; diphtheria, 1306; enteric fever, 48; pneumonia, 2108; puerperal fever, 54; puerperal pyrexia, 126; cerebro-spinal fever, 9; acute poliomyelitis, 7; acute polio-encephalitis, 3; encephalitis lethargica, 25; continued fever, 1; dysentery, 12; ophthalmia neonatorum, 118. There was no case of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were notified from 18 counties—viz., Bedford 1 (Bedford), Derby 15, Durham 71, Isle of Ely 4, Lancaster 30, Leicester 3, Lincoln, Parts of Lindsey 7 (Lincoln C.B.), Northampton 1 (Kettering), Northumberland 14, Nottingham 14, Stafford 2, Sussex West 4, Warwick 19, Yorks North Riding 12, West Riding 87, Brecknock 21, Glamorgan 36, Monmouth 57.

Since this return was made up ten cases of small-pox have been reported from Barnet and isolated at Cheshunt. Six of these were patients and one a nurse in the Wellhouse Poor-Law Hospital; the remaining three were children at the Guy's Cliff cottage homes.

In view of the number of cases of small-pox reported among casuals from different parts of the country, the Minister of Health has directed poor-law medical officers from now until March 31st to examine all casuals on admission to the workhouse, stripping them to the waist for efficient inspection.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 91 (31) from measles, 7 (2) from scarlet fever, 23 (4) from whooping-cough, 48 (7) from diphtheria, 61 (11) from diarrhœa and enteritis under two years, and 145 (16) from influenza. The figures in parentheses are those for London itself. Of the 60 fatal cases of measles outside London 11 were reported from Bristol, 18 from Manchester, 1 from Salford, 4 each from Croydon and Brighton; while the figures from Glasgow and Dublin for the same week were 46 and 11 respectively. The number of stillbirths registered during the week was 300 in the great towns, including 49 in London.

The death from small-pox reported in last week's return from Bradford occurred in the North Bierley Institution, Clayton, just outside the county borough boundary. The cause of death was certified by the medical officer in charge as: (*a*) myocarditis, (*b*) senility, (*c*) small-pox. There was no evidence of the patient having been vaccinated.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Jan. 30th, at 5 P.M., at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. 1, Dr. Vincent Coates will lecture on the Principles of Spa Treatment. On Jan. 31st, at 10 A.M., at the Brompton Hospital for Consumption, Dr. Burrell will give a clinical demonstration, and on Feb. 2nd, at 2 P.M., at the Royal National Orthopædic Hospital, Mr. W. H. Trethowan will demonstrate. On Feb. 3rd, at 5 P.M., at the Royal Westminster Ophthalmic Hospital, Mr. W. H. McMullen will give a lecture-demonstration on Lacrymation: Its Causes and Treatment. The lecture and demonstrations are open to members of the medical profession without fee. From Jan. 30th to Feb. 25th a course will be held at the London School of Dermatology (St. John's Hospital); clinical instruction will be given in the out-patient department every day and lectures on Tuesdays and Thursdays, at 5 P.M. (practical pathological demonstrations can also be arranged). From Feb. 6th, for four weeks, a course in Venereal Disease will be given at the London Lock Hospital during the afternoons and evenings, consisting of clinical instruction and lectures. From Feb. 6th to 18th a course in Diseases of Children will be given at the Paddington Green Children's Hospital and the Victoria Hospital for Children. From Feb. 20th to March 3rd, at the Queen Mary's Hospital, Stratford, an all-day course will be given in medicine, surgery, and the specialties. The entire practice of the hospital will be open to those taking the course. From Jan. 30th to March 23rd, at the National Hospital, Queen-square, a course will be held in neurology, anatomy, and physiology of the nervous system, and demonstrations will be given in methods of examination and in pathology. Information, syllabuses, tickets, and copies of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed the Triple Qualification Examination:—

FINAL EXAMINATION.

M. O. Chacko, P. G. Sawmy, H. F. N. Slane, E. E. M. Steen, E. S. R. Menon, W. W. McGlashan, R. G. Paranjape, J. B. Forrester, S. E. W. Boland, V. Sinnetamby, S. T. Sodah, Sinnathamby Chelliah, F. H. Emery, J. H. M. Beck, Bangalore Jaya Ram, James Masilamani, W. B. Russell, A. G. Smith, N. C. Dasgupta, A. M. Boyne, H. C. Furst, E. P. N. Abeyesundere, B. J. Ess, J. E. D. Mendis, G. R. Gardner, J. M. Chittambalam, Maurice Klar, K. L. Palit, F. W. Raysmith, J. C. Anders, and J. E. Felix.

UNIVERSITY OF WALES.—The following candidates have satisfied the examiners:—

M.B., B.CH.

Medicine, Surgery, and Obstetrics—John H. Williams, William G. Evans, and Trevor R. Bryant.

UNIVERSITY OF LONDON: *University College Hospital Medical School.*—Applications are invited for the Radcliffe Crocker travelling scholarship in dermatology, which is worth about £280, and is tenable for 12 months, to be spent in a place of study outside the United Kingdom.

London School of Hygiene and Tropical Medicine.—A research studentship in protozoology is offered at this school. It will in general be held for two years, and remuneration is at the rate of £250 a year. Details of both these appointments will be found in our advertisement column.

UNIVERSITY COLLEGE HOSPITAL, LONDON.—Dr A. F. Tredgold, who has been appointed an associate physician of the hospital in psychological medicine, will hold a special clinic for conditions of delayed and incomplete mental development or alternatively for cases of mental deficiency, retardation, and allied conditions, the clinic being the first of its kind to be established at a hospital with a medical school. The new clinic will not only afford opportunities for students to gain a knowledge of mental deficiency and allied conditions but will, it is hoped, constitute a further step towards bringing psychological medicine into touch with general medicine. The clinic will be held in the out-patient department of the hospital on Thursdays at 11 A.M., commencing Feb. 2nd.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The Hunterian Oration will be delivered at the College by Sir Holburt Waring on Tuesday, Feb. 14th, at 4 P.M. Fellows and Members of the College are invited to attend.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—The annual general meeting of this association is to be held at 11, Chandos-street, London, W., on Friday, Feb. 10th, at 5 P.M. (tea 4.30 P.M.), when Dr. A. A. Mumford will read a paper on the School Medical Officer of the Future.

EUGENICS SOCIETY.—The Galton anniversary dinner will be held at the Rembrandt Hotel, Brompton-road, S.W., on Thursday, Feb. 16th, at 7.15 P.M. The Galton lecture will be delivered by Mr. C. J. Bond, F.R.C.S., whose subject will be the Distribution of Natural Capacity in the Population and the Need for National Stock-taking.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The College will be closed during the month of February for internal painting and decorating.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The Maternity and Child Welfare Group is meeting this week-end at Edinburgh under the presidency of Dr. E. H. T. Nash, with the support of Mr. Alexander Miles, President of the Royal College of Surgeons of Edinburgh, and Dr. W. Robertson, medical officer of health for the city. To-day (Saturday) there will be a clinical meeting at Pilton Hospital, with a lecture demonstration on congenital syphilis by Dr. David Lees at 10.30 A.M., and two afternoon sessions (2.30 to 4 P.M.) will be held at the Royal Hospital for Sick Children and the City Fever Hospital, when papers will be read by Prof. Leonard Findlay, Dr. Chas. McNeil, Prof. John Fraser, Mr. D. S. Middleton, Dr. J. A. Stephen, and Dr. T. Y. Finlay.

As the report of the Departmental Committee on Vaccination has not yet been published the discussion on the Control of Small-pox, arranged by the society for Feb. 17th, is postponed until Friday, March 16th. The next council meeting of the society is also postponed until the latter date.

ROYAL LONDON OPHTHALMIC HOSPITAL.—The annual dinner of past and present students will be held at the Langham Hotel, Portland-place, W., on Wednesday, Feb. 8th, at 7 for 7.30 P.M. Sir Wilmot Herringham will take the chair. The secretary is Sir William Lister, 24, Devonshire-place, London, W.

THE fifteenth annual post-graduate week for midwives, arranged by the General Lying-in Hospital, York-road, London, S.E., will be held from May 21st to 25th. Names should be sent to the secretary, Post-Graduate Week, c/o the Hospital.

TRUE TEMPERANCE ASSOCIATION.—The annual meeting will be held at the Caxton Hall, Westminster, on Monday, Jan. 30th, at 5 P.M. Lord Lamington will take the chair and Sir William Arbuthnot Lane will be one of the speakers.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY, Feb. 1st.—5 P.M., HISTORY OF MEDICINE. Papers: Dr. G. A. Auden: (1) The Gild of the Barber Surgeons of the City of York. (2) Note on an Ancient Medical Manuscript in the Library of York Minister. 8.30 P.M., SURGERY. Pathological Evening.

THURSDAY.—8.15 P.M., TROPICAL DISEASES. Discussion on Life Assurance in the Tropics. Opened by Sir William Prout, followed by Mr. H. E. Raynes, Dr. J. F. C. Haslam, and others.

FRIDAY.—5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Cases and Specimens will be shown by Mr. Norman Patterson, Dr. Dan McKenzie, Sir James Dundas-Grant, Mr. Ridout, Dr. Jobson Horne, Mr. Barwell, and others. 8.30 P.M., ANÆSTHETICS. Paper: Mr. A. Douglas Cowburn: Death occurring under Operation, or Before Recovery from Anæsthesia.

SATURDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Papers: Dr. Alexander Fleming: The Bactericidal Power of the Blood and Methods of Altering it. Dr. A. Lowndes Yates: Methods of Estimating Alteration in the Middle Ear by Means of Quantitative Tests of Hearing. (Demonstration of audiograph.) Cases and specimens will be shown by Sir James Dundas-Grant, Dr. H. Norman Barnett, Mr. H. J. Banks-Davis, Mr. C. Hamblen Thomas, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 30th, to SATURDAY, Feb. 4th.—FELLOWSHIP OF MEDICINE LECTURE at the Medical Society of London, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Dr. Vincent Coates: The Principles of Spa Treatment.—BROMPTON HOSPITAL FOR CHEST DISEASES, Brompton. Mon., 10 A.M., Clinical Demonstration by Dr. L. S. Burrell.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W. Thurs., 2 P.M., Mr. W. H. Trethowan: Special Clinical Demonstration.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Fri., 5 P.M., Mr. W. H. McMullen: Lecture-demonstration—Lacrimation: Its Causes and Treatment.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. Course in Psychological Medicine. Lecture-demonstrations Tues. and Sat., 11 A.M.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, W.

MONDAY, Jan. 30th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department.

TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Department.

WEDNESDAY, Feb. 1st.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Genito-urinary Department. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Treatment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department. 2 P.M., Dr. Shaw: Medical Out-patients.

SATURDAY.—10 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Owen: Medical Diseases of Children.

Medical and Surgical Out-patients, Operations, Special Departments, daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, Jan. 30th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY, Feb. 1st.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

PEOPLE'S LEAGUE OF HEALTH.

THURSDAY, Feb. 2nd.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Dr. E. D. Macnamara: Primitive Instinct.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

THURSDAY, Feb. 2nd.—4.30 P.M., Mr. Frank Kidd: Some New Devices in Urinary Surgery.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Jan. 31st.—5 P.M., Dr. S. E. Dore: Alopecia.

THURSDAY, Feb. 2nd.—5 P.M., Dr. A. M. H. Gray: Xanthoma. Herpes.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Jan. 30th.—1.30 P.M., Mr. R. J. Cann: Examination of the Accessory Sinuses.

WEDNESDAY, Feb. 1st.—1.30 P.M., Mr. N. MacKeith: Examination of the Larynx.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Jan. 31st.—3.15 P.M., Dr. R. Wade: Anæsthesia.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street W.C.

THURSDAY, Feb. 2nd.—4 P.M., Dr. Poynton: Some Features in Respiratory Diseases in Child and Adult.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Feb. 1st.—4.30 P.M., Dr. Nathan Raw: Medico-Legal Problems of Lunacy.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Feb. 3rd.—3.30 P.M., Dr. Barnes: Clinical Cases.

ST. MARY'S HOSPITALS, MANCHESTER (Post-Graduate Lecture).

FRIDAY, Feb. 3rd.—4.30 P.M. (at the Whitworth-street West Branch), Dr. Dougal: Occipito-posterior Positions.

Appointments.

GEMMELL, R. W., M.D. Liverp., D.P.H., has been appointed Hon. Radiologist to the David Lewis Northern Hospital, Liverpool.

INGRAM, J. T., M.D., M.R.C.P. Lond., Lecturer in Diseases of the Skin to the University of Leeds.

RADFORD, MAITLAND, M.D., B.S. Lond., D.P.H., Medical Officer of Health for Shoreditch.

STEEL, R., M.B., Ch.B. Glasg., Hon. Radiologist at Southport Infirmary.

Certifying Surgeons under the Factory and Workshop Acts, O'SULLIVAN, A. J., L.A.H. Dub. (Roade District of the County of Northampton); DODGSON, H., M.B., Ch.B. Edin. (Folkestone District of the County of Kent).

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road, N.W.—Hon. Consulting Phys. and Hon. Surg. Reg.

Bedford County Hospital.—Asst. H.S. At rate of £130.

Birkenhead General Hospital.—H.P. £150. Also Hon. Orthopædic S.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bristol, Royal Hospital for Sick Children and Women.—Hon. P. to Out-patients.

Calcutta, Presidency College.—Prof. in Physiology. Rs.800 per month.

Calcutta School of Tropical Medicine.—Research Worker Rs.1750.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cardiff Royal Infirmary.—Hon. Asst. Surg. to Ear, Nose, and Throat Department.

City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

City of London Maternity Hospital, City-road, E.C.—Registrar. £100.

Dewsbury and District General Infirmary.—H.S. £200.

Edinburgh, East Fortune Sanatorium.—Asst. M.O. £250.

Elizabeth Garrett Anderson Hospital.—Asst. Radiologist. £100. Also Asst. Pathologist. £150. Both part-time.

Great Yarmouth, General Hospital.—H.S. £150.

Hertford County Hospital.—Hon. Asst. S.

His Majesty's Indian Medical Service.—Appointments.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—Hon. Asst. P.

Hospital for Women, Soho-square, W.—Hon. Med. O. to Out-patients.

Hull Royal Infirmary.—Cas. H.S. At rate of £130.

Ilford Emergency Hospital, Essex.—Jun. H.S. £90.

Leicester Royal Infirmary.—Hon. P. and Asst. Hon. P. Asst. Pathologist. £500. Also Cas. H.S. At rate of £125.

Liverpool, City of.—City Coroner. £1000.

London School of Hygiene and Tropical Medicine, 23, Endsleigh-gardens, W.C.—University Chair of Public Health. £1500. Also Research Studentship in Protozoology. £250.

Margate, Princess Mary's Hospital for Children.—Second Asst. M.O. £550.

Middlesbrough County Borough.—Asst. to M.O.H. £450.

Mount Vernon Hospital, 7, Fitzroy-square, W.—Asst. P.

Preston County Borough.—Asst. S.M.O. £600.

Queen Mary's Hospital for the East End, E.—Anæsthetist. 25 guineas.

Royal London Ophthalmic Hospital, City-road, E.C.—Asst. Surg.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. At rate of £175 and £130 respectively.

St. Thomas's Hospital.—Phys. in charge of Out-patients.

Sheffield Royal Infirmary.—Hon. Asst. Ophth. S.

Shoreditch, Metropolitan Borough of.—Asst. M.O.H. £650.

Sleaford, Kesteven Mental Hospital.—Asst. M.O. £350.

Smethwick County Borough.—Asst. M.O.H., &c. £600.

Stoke-on-Trent City Maternity Home.—Res. M.O. £450. Also Consulting Officer. £150.

Truro, Royal Cornwall Infirmary.—H.S. £170.

University College Hospital Medical School.—Radcliffe Crocker Travelling Scholarship in Dermatology. £280.

West London Hospital, Hammersmith-road, W.—Hon. Obstet Reg.

West Riding County Council.—School Oculist. £600.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Hipperholme (York, West Riding), Cirencester (Gloucestershire), Peasenhall (Suffolk), Pontrhydygroes (Cardiganshire), Chester (Cheshire), Fort William (Inverness-shire), Inverurie (Aberdeenshire), and Uckfield (Sussex).

The Secretary of State for the Home Department gives notice of vacancies for one or more Ophthalmic Specialist Medical Referees under the Workmen's Compensation Act for County Courts in circuits comprising roughly the East Riding of Yorkshire and Lincolnshire. A vacancy is also announced in Circuit No. 55, Bridport, Dorchester, &c. Applications should reach the Private Secretary, Home Office, London, S.W., not later than Feb. 7th and 10th respectively.

Births, Marriages, and Deaths.

BIRTHS.

BILDERBECK.—On Jan. 19th, at a nursing home, Littlehampton, Sussex, the wife of Major Bilderbeck, I.M.S., of a son.

EDWARDS.—On Jan. 22nd, the wife of A. Tudor Edwards, F.R.C.S., of Queen Anne-street, Cavendish-square, of a daughter (stillborn).

JONES.—On Jan. 19th, at Royal Naval Hospital, Haslar, the wife of Surgeon-Commander Lloyd Jones, of a daughter.

MARRIAGES.

CARDELL—CRAIG.—On Jan. 21st, at All Saints Church, Kenley, Surrey, John Douglas Magor Cardell, M.B., B.S., F.R.C.S., to Audrey Winifred, elder daughter of Lieut.-Colonel James Craig, C.B., and Mrs. Craig, The Glen, Kenley, Surrey.

DEATHS.

BROWN.—On Jan. 21st, Lieut.-Colonel R. Tilbury Brown, late R.A.M.C., aged 54.

DUCKWORTH.—On Jan. 20th, at Grosvenor-place, S.W., Sir Dyce Duckworth, Bart., M.D., LL.D., F.R.C.P., aged 87.

HENRY.—On Jan. 16th, at Clones, suddenly, from pneumonia, William Henry, M.B.

LANG.—On Jan. 18th, Basil Thorn Lang, F.R.C.S., Surgeon to the Royal London Ophthalmic Hospital, Moorfields, aged 47 years.

RIDDELL.—On Jan. 19th, very suddenly, Brownlow Riddell, O.B.E., M.D., Newton-place, Glasgow, aged 58 years.

SABERTON.—On Jan. 16th, at Forest-road, Bournemouth, Claude William Scott Saberton, M.D., D.M.R.E. Camb.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

A VITA-GLASS PAVILION.

Dr. T. C. Hunter writes to call our attention to a pavilion, the first of its kind he believes, at the Stannington Sanatorium for Consumptive Children, Morpeth, of which he is medical superintendent. Owing to its relative impermeability to ultra-violet rays ordinary glass cannot profitably be used to shelter patients undergoing sun and fresh-air treatment for tuberculosis. With the invention of a glass which has the property of transmitting a considerably greater portion of these rays, hundreds of hours of sunshine can now be utilised which otherwise would be lost owing to the Spartan character of the climate. "I do not know what is the experience of other observers," Dr. Hunter writes, "but in our opinion the artificial rays are not comparable with the natural sunlight for healing purposes and our recoveries are immeasurably quicker and more certain with the latter agent, though we use both extensively. Moreover, a larger proportion of cases can be so treated." The pavilion, 70 by 25 feet, is composed entirely of vita-glass excepting for certain small offices in wooden framework. Ventilation on boisterous days is provided for by a large lantern which can be opened along its entire length, north and south. The whole of the southern and half of the northern front can be opened by means of folding windows on ball bearings, which slide along and fold up and back. The building was designed to accommodate 50 patients in special reclining chairs such as are extensively used at Swiss health resorts. By this means the most delicate patients, whose powers of resistance are small, can take their light and air with little drain on their combustion. "Only those who have sought their cure on draughty balconies and verandahs," Dr. Hunter remarks, "can fully appreciate this boon." The glass costs several times the price of ordinary glass, and the money was given by an anonymous donor for the special purpose. The reproduced photograph shows the interior of the pavilion with patients undergoing treatment.

The Stannington Vita-glass Pavilion.

A HOSPITAL PHARMACOPŒIA.

THE pharmacopœia of the Great Ormond-street Hospital has a value which extends considerably beyond its primary purpose. The experience that comes of collating results obtained from a large number of cases is here placed at the disposal of practitioners whose observations of children's ailments are relatively few and scattered. Classified formulas occupy hardly more than half the total space of 83 pages; doses of internal medicines have been adjusted to those suitable for children 1 year old, and formulas differing from those with identical titles in the British Pharmacopœia bear an indication of the fact. Diet tables are divided into five age-periods, beginning at six months and ending at seven years; in addition there will be found a milk-water-sugar table for young infants, quantities for a typical week's dinner for children 7 years old, and a list of diet ingredients. The Medical Committee has recently (July 6th, 1927) revised its food recipes, its directions for the care of rickety children, for tending paralysed children, for cleaning the teeth, and so forth; these sections follow the memoranda on diet. Other features include Holt's table of weight, height, and circumference to the twelfth year, quarantine and incubation periods, and lists of thermometric and other equivalents. The book is provided with an index of titles and an index of drugs. The new edition, revised by Mr. J. Wicliffe Peck, F.C.S., is printed for private use under the authority of the Hospital Committee, and copies are obtainable on application to the Secretary of the hospital.

A PLEA FOR A EUGENIC SETTLEMENT.

THE author of a book entitled the Survival of the Unfittest (Charles Wicksteed Armstrong. London: C. W. Daniel Company. Pp. 160. 6s.) is a widely travelled man, who recognises in modern democracy a threat to this country and to the white races. In the competition for votes which is a sine qua non of party Government, in the National Insurance Act, in the "dole," and in indiscriminate charity are seen means by which the unfit are preserved and encouraged to multiply, while the biologically fit are handicapped. It is suggested that if the necessary funds can be raised, a eugenic settlement be founded wherein only those of established physical and mental excellence be admitted. The author's ideas emerge from a coherent system of social and biological theory, which, while likely to provoke disagreement, bespeaks original and vigorous thought. The book would be read with profit by those medical men unfamiliar with the aims and principles of eugenics.

CYSTIC PNEUMATOSIS OF THE BOWEL.

F.R.C.S. Edin. writes: "May I call the attention of Dr. J. Silverstone, whose paper on cystic pneumatosis of the bowel appears in your issue of Jan. 21st, to the fact that in addition to the three time-worn and not altogether satisfactory theories of causation which he mentions there is a third theory—the *chemical*—which has been advanced by Prof. P. Masson, of Strasbourg. This theory has not received the attention it deserves in this country. It is much more satisfying and logical than any of the three theories Dr. Silverstone, following precent, quotes. The argument will be found in extenso in Ann. d'anat. pathol. et d'anat. normale médico-chirurg., Paris, 1925, ii., 541."

PLASMOCHIN OR PLASMOQUINE.

To the new synthetic remedy for malaria, introduced to the Düsseldorf Conference in September, 1926, by Prof. P. Mühlens (Hamburg) and Prof. F. Sioli (Düsseldorf), the name of plasmochin was given, and under this name it is issued by the Farbenindustrie Leverkusen, who prepare it. Bayer Products Ltd. have registered the same product in this country under the trade-mark "plasmoquine," and they would like us to point out to our readers that plasmochin and plasmoquine are identical.